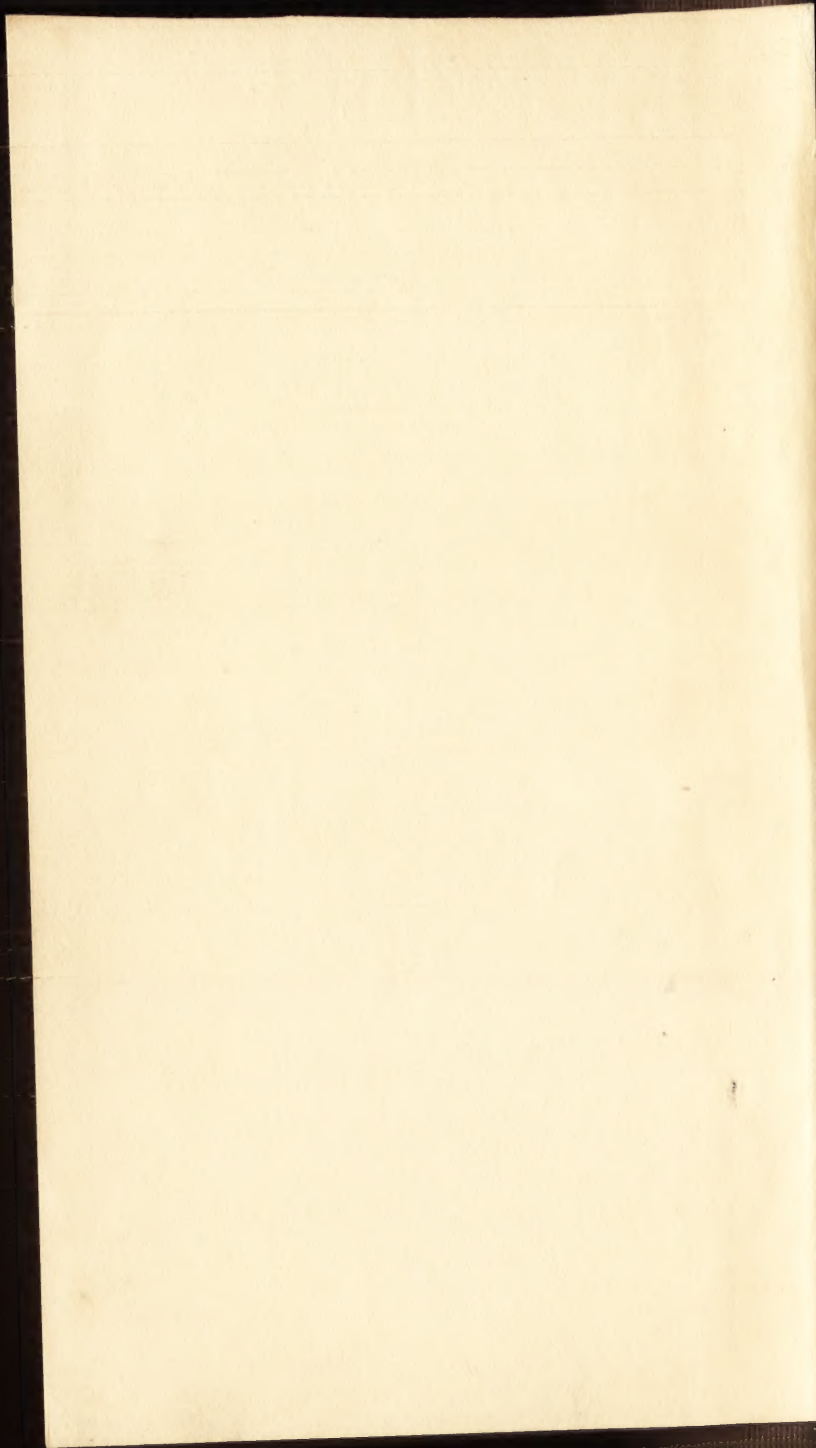


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T H E

COUNTRY DYER'S

A S S I S T A N T.

XXXXXXXXXXXXXXXXXXXX
By ASA ELLIS, JUN.
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BROOKFIELD, (MASSACHUSETTS :)
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FOR THE AUTHOR,

[1798]

UNITED STATES

DEPARTMENT OF THE INTERIOR

LAND OFFICE

WASHINGTON, D. C.

DISTRICT OF MASSACHUSETTS DISTRICT, TO WIT.

BE it remembered, That on the thirteenth day of November, in the twenty-third year of the Independence of the United States of America, ASA ELLIS, JUN. of the said district, hath deposited in this Office, the title of a Book, the right whereof he claims as Author, in the words following, to wit. "THE COUNTRY DYER'S ASSISTANT, by ASA ELLIS, JUN."

In conformity to the Act of the Congress of the United States, entitled "An Act for the Encouragement of Learning, by securing the Copies of Maps, Charts, and Books, to the Authors and Proprietors of such Copies, during the time therein mentioned."

N. GOODALE, Clerk of the District
of Massachusetts District. |

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Attest, N. GOODALE, Clerk. }

INTRODUCTION.

IN such a country as America, especially the northern states, which abound in Sheep, the art of dying wool is of high importance. Were the art suitably cultivated, we should not only, by industry, satisfy our curiosity upon that raw material; but prevent an extensive and needless importation; and of consequence retain our money in our own country. The art of dying is an useful branch of chymistry. Its influence on the sale of all stuffs used for furniture, or apparel, has been felt by almost all Europe, who have been enriched by it, especially England.

But few people, in America, estimate the value of manufactured woollens, of their own country. We too generally resort, for our cloths, to the manufacturies of Europe.

With regard to our own manufacture of cloth, women and children commonly dic-

tate the colours to be imprest upon them. But they frequently make an injudicious choice; the colour which they dictate fades; the coat is spoiled, is thrown aside, or given to Jack the garden boy, and poor little Tommy must have a new one.

True colours retain the complexion that is imprest on goods. False ones, on wearing and being exposed to the sun and air, lose all their original tints; and of consequence the goods are so much injured, as to render them unsalable.

The government of France were early sensible of this, and formed special regulations to improve the art of dying. They employed their most able chymists to inspect the dyers, and to mark a distinction between the true and the false dyes. Those who professed the art were of consequence, distinguished by the epithets of the true and of the false dyers. The former were encouraged; the latter were laid under particular restraints. The design of government, in these regulations, was to improve the art and en-

rich their nation. By this wise interference of authority, France realized both objects.

Too many dyers of this country, have precluded themselves from improvement. Confining themselves to incorrect *Recipes*, they have neglected experiments, and other general means of information.

A circumstantial detail of experiments, with their various results, is, in this small volume, presented to the country dyers. In the following work, I have endeavored to be plain and intelligible to all who can clean the copper, or turn the reel.

Not only those who profess the art, but private families may embrace the advantages of the following instructions, and colour their own yarn of woollen, worsted and thread, and small pieces of silk, as beautifully, as the dyers. This will save families much expense, and dyers, in general, do not wish to be burdened, with such small commands.

This publication, presented to the country dyers, is the result of twenty years practice, close study, fair trials, unwearied pains and expense.

The author flatters himself that he shall avoid the imputation of vanity, while he entertains a confidence that the following instructions, will be of public utility, and of service to many of his brethren in the art of dying.

Brookfield, Dec. 1798.

T H E

COUNTRY DYER'S

A S S I S T A N T.

C H A P. I.

Of Vessels and Utensils employed in dying.

YOUR dye-house should be sixteen or twenty feet square; well furnished with light and placed near a stream; water being essentially necessary for preparing your cloths, and for rinsing them when dyed. The floor should be made of leached ashes, as it will soon become hard and render you more secure from fire.

Your copper, or coppers should be situated near the centre of the house; and the blue vat, about six feet from the copper, in which you intend to heat the blue die.

The size of your blue vat will be in proportion to the business you expect. The common size and dimensions are as follow; viz. it should be five feet deep, three feet diameter at the top, and twenty inches at the bottom. Place your vat two feet in the earth, for the sake of conveniency; observe that its cover fit close.

The staves of your vat should be one inch and a half thick, bound with iron hoops. Wooden ones will do, but you will find them more expensive than iron, they will soon fail, and perhaps the vat will spring a leak and you loose your dye before it is perceived.

It is necessary to have a hoop, with a net stretched over it, that will sink within your vat. This hoop should be suspended about two feet from the bottom of the vat, by four small cords fastened at the top of the vat. The design is to keep your cloth, while colouring, from the grounds, or sediment, which lies at the bottom.

A dyer's rake is also necessary. It is made in the shape of a churn-dash, with the exception only that it should be a semicircle, or

half round. The foot piece should be about twelve inches diameter, with three or four holes through it, and a stiff handle inserted, five feet long.

Further, a stick should be put across your vat, about one inch below the surface of the dye, in order to draw the cloth over, when colouring; and you will need two sticks about a foot long with hooks at one end, to hall your cloth, when in the dye; for it will be inconvenient to hall it with your hands. Tenter hooks will answer the purpose.

These directions, for the vat, are the best I know; as it was remarked, you can conform its dimensions, to the business, for which you wish to employ it.

A copper, or caldron is necessary for all dyers. The business cannot be carried on without one or more of them. Your largest copper should contain sixty, or seventy gallons. It should be set in a brick furnace; because that will heat your copper sooner. The top of the furnace, which encloses the copper ought to be six inches thick, so that

you may plank the brick work, and nail the lip of the copper to the plank and plaister of the furnace. Then your copper, with care can be kept clean, which is absolutely necessary.

An iron caldron is very convenient, in a dye-house to boil Logwood and other dye-stuffs; there are many uses, in which it will be employed; the benefit of one would soon pay you for purchasing it. A small kettle will answer, but it is inconvenient.

A reel, or winch is necessary; it is made of a piece of timber two inches square and long enough to cross the copper, with a crank at one end, and four flats, or posts, that are incerted in the shaft before mentioned. The reel, thus formed, should be about a yard in circumference. On this, the cloth, in the copper is to be turned, while colouring, to preserve it from spotting.

Many dyers place one end of a board on the edge of the copper to receive the cloth in order for cooling; but it is much better to have a cooling board, about eight feet long

and one foot wide placed at a small distance from the copper about waist high. Another about the size of a press-board you may rest on the top of the copper to receive the cloth from the reel; then take the board with the cloth and place it under the cooling-board, where you will be careful to have blocks to rest your cloth on, in order to cool it, by folding it upon your cooling board:

Those, who intend to dye indigo blue; must have an iron kettle, that will hold a pailful, in order to grind indigo; and an iron ball, of twelve pounds weight; one of eighteen pounds is better.

Dyers should be furnished with spare tubs and pails; also with steelyards, or scales that are true; in order to weigh dye-stuffs, which ought never to be used without strict attention to their weight. There are but few exceptions to this rule.

C H A P. II.

Remarks on Dyestuffs.

OF Indigo there are various qualities. Many dyers often fail in their judgment of the Indigo, they purchase. The best is imported from the Spanish dominions. It is generally fine and soft; it will swim on the surface of water; its colour is a beautiful purple; it is called float, or floaton. But this Indigo comes to us charged at so high a price, that little use is made of it, except in Saxon greens. French Indigo is in junks, about an inch square. It is not so soft and fine as the Spanish; when broken, if it discovers a fine purple, the quality is good; it may be used in Saxon green.

Carolina Indigo will answer for almost all colours obtained from indigo. I have obtained as good Saxon green, from this, as from any other kind. If this Indigo will work in the oil of vitriol and produce good

Saxon greens; it will work any way, is dying cloths, and may be pronounced comparatively good. This kind of Indigo is brought from Carolina in junks about two inches square. You may find its quality, by breaking a junk, or by cutting or scraping the edge of it with a knife. It should break easily, and in all those experiments it should give the colour of a bright, shining copperas purple, and when broken, appears something mouldy, as if the air had passed through it. That which puts on a dirty, sad, or dull colour, is fit for no use whatever. That, which breaks hard and flinty, full of small, round, white specks, will answer no purpose in dying, not even in families urine dye.

Of Cochineal.

Cochineal is an insect cultivated in South America. It is shipped to Spain; from Spain to England; whence we obtain it at a high price, on the account of accumulated and heavy duties. It is a strong and good dyestuff, or drug, and will return handsome

profits to the dyer when used in scarlets, pinks and crimsons. That which is good will appear plump and look as though a light sprinkling of flour had been cast on it. If you preserve it dry, it may be kept any length of time without damage. There is a kind of *Cochineal*, which is wild and uncultivated. It is very small and shrivelled. However you may obtain a good colour from it; but it will require three times the weight of this, to answer the purpose.

Some *Cochineal* is damaged by salt water. This appears of a dirty crimson cast and is of no use whatever.

Of Camwood.

Camwood is, with propriety, ranked among the best of dyestuffs. Its colour is permanent; it will resist the influence of the salts of the air and almost all acids. But a few years since, it was first brought to this country. It comes in the wood from six inches to a foot through; it splits freely; when good is heavy, and on opening it, the first appearance is a bright, redish orange;

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but, in a few minutes, being exposed to the air, it turns to a redish brown colour; its smell is pungent. Of late it has been imported in casks, ground fine like flour. This is much more convenient for the dyer; for that which comes in the stick, must be chipped very fine, and being very close wood, it requires much boiling.

That which is ground, if good, will appear of a yellowish red; if you wave it, a hot dust will rise which irritates the nose and the glands of your throat.

That which is mild and appears of a darkish red has been leached and will produce no good colour.

Of Logwood.

Logwood is much used, by dyers, both in Europe and America. Its low price and the great variety of shades it produces, is one reason why so much Logwood is used. But however various and beautiful the shades, it first gives, the greater part of them soon fade and perish.

The principal use of Logwood is in jet blacks, raven blacks or crow colour ; also navy blues cannot be conveniently made without it.

Logwood is imported in sticks of various dimensions ; if good will emit an agreeable flavour and be sweet to the taste.

Of Barwood.

Barwood is a dyestuff not much used in America. Some, however have mistaken it for Camwood, not having sufficient information to distinguish the one from the other ; being ignorant of its use, they have been disappointed in their colour.

Barwood will produce chocolates and darkish browns, similar to those impressed by Hemlock bark. Barwood commonly comes in clefts. It is of a redish brown ; splits freely one way of the grain ; the other hard and rough.

Of Greenwood.

Greenwood comes in casks ground. It is but lately Greenwood was first imported to this country. It is of a greenish yellow ;

it answers well, in all olives and sandy drabs. However Sumach will produce the same, and where one cannot be obtained, the other will answer.

Of Brazil or Redwood.

Redwood affords, a fine colour, whether used alone, united with Logwood, or with various other ingredients. It will produce a variety of colours, by mixing it with Logwood; such as the violet, leloch and many others of that cast. Without Logwood it gives you the pink, claret &c. However, a small quantity of Nutgals would be of service in any of the dyes made of Redwood; provided you wish to make them darker. But the colour, which Redwood produces is false and generally fades out. However, if you will take the trouble of nine days operation, you may obtain a very permanent colour.

Redwood comes in small sticks; if good looks bright bearing a little on a yellowish red; it smells agreeably and chips freely. That which has been injured by sea-water,

or the weather, affords a dull red chip, and is cohesive and clingy.

Of Fustick.

Fustick is much used in this country. The colour it naturally produces is an orange yellow. It is often employed in greens, olives and drabs; if good, it answers a valuable purpose. It should appear when split of a bright yellow, tinged with the orange colour. The wood is close and hard; generally hard to split and full of splinters. The root and that part of the wood which is knoty is the best. It comes to us in large logs from six inches to one foot and a half through; if it be rotten, or otherwise injured it will not answer well for saxon greens; however, it may be employed in dark drabs.

Of Turmerek.

Turmerek is a root, which dyes the finest yellow. Without it, neither a good yellow, green nor straw colour can be imprest upon silks. It is used with Allum and a little Tartar. The different shades it produces on

silk, when mixed with other dye-stuffs, are too numerous to be described in this small volume. Turmerech is a small root, about two inches long, as big as the small finger.

If it be good, when broken, it will present you a dark yellow; a strong flavour and it is very bitter to the taste.

Of Sumach.

Sumach is a crooked shrub, with spreading branches; it rises about ten feet high and grows spontaneously in many parts of this country. It is an excellent dye-wood, for drabs and sand colours; its impressions are permanent. It would be well if it were more employed by our country dyers, than it is at present. Its berries, when ripe are of a dark red; they are acid to the taste, and may be employed in almost any dark colour.

Sumach should be collected when it is full of sap. Be careful that the sap be taken off with a drawing-knife before you use it; for there is a glutinous balsam in the sap, which will adhere to cloth, and of consequence it will be spotted.

The heart and piths are the only parts to be used, as it respects the wood. It presents you with the colour of a faint orange. It will be good for years after it is cut, if the sap be taken off and the sticks are kept dry.

Of Negroger.

Negroger is brought to us in sticks about six inches through. The sticks have a number of concaves in them, which have the appearance of art. This wood splits freely; discovers a redish orange colour, something like Camwood; the smell is not sharp and poignant: Its colour is a bright cinnamon. But it soon fades, and it will be of little use to dyers, unless some method can be found to fix and retain the colour.

Of Madder.

Madder is a root of excellent quality. If it be good and suitably employed, it will give a permanent colour.

Of Madder there are two kinds the one called grape, the other brown. The grape Madder, is the more beautiful and better to

colour red; the brown will answer in deep blues. This comes cheaper than the grape. The grape Madder possesses a yellowish red cast, to the smell purgent; to the taste sweet. The brown is much darker and not so high flavoured.

Madder should be kept close; if it be exposed to the air, it will not produce so bright, nor so much colour.

Of Barks, in general.

Butternut is an excellent bark for dyers; its colour is durable; it is useful in many of the browns and also in black.

The bark should be used while it is green, if dry it will not answer a good purpose. It will be the better way for dyers to stock themselves, in the fall with so much of the wood, with the bark on, as they expect to need for the season. It should be kept under cover, and the bark shaved off as they use it.

Of Hemlock bark.

Hemlock is a very good bark for colouring. The rots should be taken off and

whether green or dry it is equally good, in browns, its colour is of a redish cast.

Of Yellow Oak bark.

This bark produces a strong colour and is good in olive browns and blacks. Whether it be green or dry, it is equally good. It will not answer in Saxon greens. Its colour is of a much duller cast than Fustick or Turmeric.

Walnut bark or Hichory is something like yellow oak; its colour is rather brighter; both are durable, and either of them will answer the same purpose.

Of White Oak bark.

This bark is good in sand colours and drabs. The colour is permanent. A small quantity of this bark is sufficient for your purpose. Take off all the top and rough parts of the bark; otherwise it will adhere too and injure your cloth.

Of Alder bark.

This bark is good and its impressions durable, it is useful in almost all dark colours;

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it assists in filling up, and darkening the shades and leaves the colour bright and clear.

White maple bark produces a slate colour, which is beautiful ; but it soon fades out. It must be ranked among the false dyes.

White birch bark produces much the same colour, only it is lighter, and like the maple will soon fade.

Yellow birch, white ash and sassafras barks are good, in light browns, or ash colours ; if they be properly used, the colours will be clear and beautiful, and they will leave the cloth soft and pliable.

These barks are profitable to country dyers when they have not a supply of Nutgale.

C H A P. III.

Recipe for the blue dye, or Indigo Vat.

AS before observed, the size of your vat will be in proportion to the business, in which you would employ it. In

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order to set, or raise a new dye, put one pound and an half of Indigo into an iron kettle, which will contain two or three gallons; then fill your kettle with river, or pond water, wash the Indigo and pour off the water; then take a pestle and beat the Indigo so small that a cannon ball will run upon it. Add a point of urine to the Indigo thus prepared for grinding; then place the kettle on your knees and let the ball run on the Indigo till it be ground to a paste; observe occasionally to scrape down with a knife, the Indigo, which adheres to the sides of the kettle, lest you should waste it.

If your Indigo be too dry add a little more urine. It should be sufficiently moist that the ball may roll freely; but not so thin as to stop over. This process of grinding should be continued about half a day. The Indigo being thus prepared may be set aside for the present. Your vat is, in the next place, to be put in order. First, it should be about half full of boiling water; then put in a pound and an half of good potash dissolved in hot water; to this add twelve

quarts of wheat bran ; after sifting out all the flower or kernel, sprinkle it into the vat with the hand and stir the dye with the rake. This done, add twelve ounces of good grape Madder, then with the rake, mix it well with your dye. In the next place, take the Indigo you have ground, nearly fill the kettle with warm water ; keep the ball rolling, while the kettle is filling, and let the ball run until the Indigo is well united with the water ; then let it stand and settle for two or three minutes, then pour the water that is on the Indigo, into the vat. Be careful that none of the sediment at the bottom of the kettle is turned off with the water ; this must be ground again and more warm water added and poured off, in the manner just described, until the Indigo is nearly all dissolved.

Observe, through all this process, your vat must be closely covered, excepting the time that is necessary to introduce the ingredients.

When you have poured in all your Indigo, which is the last article, you will do well

to stir up the dye, with the rake; then cover your vat, if possible to exclude the circulation of the air. Let your vat, thus confined, remain for eight or nine hours before it be opened.

Half a pail-full of grounds from an old vat, that is in good order, might be useful as the first article introduced into a new one. However, in fitting a new vat, the evening is the best time, having all the materials, we have mentioned, introduced, by the hour of ten at night. Then your dye may rest till the morning; when you should open the vat and plunge your rake from the top to the bottom of the dye. This should be done with activity and exertion. Bubbles will appear and by repeating the plunges six or seven times, if a thick blue froth rises on the surface of the dye which is called the head, continuing to float, and further, if it put on the appearance of a darkish green; the dye may be pronounced in a good state and is fit for colouring. Perhaps, the process of plunging must be repeated two or three times; but remember every time, after you

have plunged your rake in the dye, to cover your vat closely, and to let it rest for an hour between these trials. If your dye becomes cool, it will not rise to a head, though it be good.

If the dye becomes cool it must be heat again. This will retard business and cause trouble. If the dye when first opened, in the morning, appear of a pale blue cast, instead of a dark green, a handful or two of Madder must be sprinkled into the vat.

The dye in the morning after it is set, should be so warm that you cannot bear your hand in it longer than one minute. If the dye appear of a pale indifferent colour, and a whitish scum rises on the surface, it does not work and will not colour. In this case, the dye must be heat, and a small portion of all its ingredients must be added; also a handful of stone lime should be put to warm water, and after settling pour off the lime water, into the vat.

Many, through want of better instruction, will frequently look into the vat, to discover

the state of the dye. By thus exposing it to the air it cools, and they will never bring it to a head till they are taught better.

Of all dyes, the blue is the most difficult and must be attended with the greatest care. After the vat is set and comes to a head, it may stand secure till employed for dying cloth. When the cloth is ready for colouring, the dye must be heat.

If you have sixty yards of flannel, that is, so many yards of cloth after it has been scoured, or one quarter fulled; two pounds of Indigo ground with a ball according to our former direction must be put into the vat, together with the proportionable additions, of Potash, Madder and wheat bran.

The dye should be raised within three inches of the top of the vat.

Let the vat be hot at night when you leave it. To preserve the heat, enclose the vat with a number of yards of cloth, that it may be sufficiently warm in the morning. At that time, when you open it plunge your rake in the dye, then cover it closely; rest one hour then plunge again, repeat these op-

erations two or three times. If the dye be in a good state and work well, there will be as many as ten or twelve quarts of froth or head, floating on the surface of the dye, whose colour will appear of a beautiful dark blue; at the same time, the body of the dye will give you a dark green. This is the proper state of the dye, for colouring; or when the dye ought to be employed.

The cloth should be cleansed from all filth; especially grease; for grease will over-set the dye even in its best state. Also every thing should be prepared when the liquor is in readiness. So soon as the vat is opened, the head or froth should be taken off and put into a vessel that will contain it, next the net should be let down, and the stick, or cross placed about one inch below the surface of the dye, for the purpose of halting the cloth over it.

In the next place, the cloth is to be taken from hot water, being well drained, which process must be observed every time of dipping half the cloth into the vat, beginning at one end, keep it open, till you have drawn

the whole piece into the dye. Persevere in halling backwards and forwards from one end to the other for twenty minutes; at the same time it should be entirely in the dye. After this process you should begin at one end of the cloth, wring it up and take it on the folding board, and fold it over until it becomes blue and even; for if this process be neglected your goods will be spotted.

The cloth when first taken out of the vat will exhibit a green shade; but being exposed to the air, will become blue.

Dip the cloth twice; then take out the cross and net; put back the froth, or head, which was taken off. Stir your dye and plunge your rake in it. Then close the vat for an hour. After that, proceed as before, till the colour you wish is obtained.

The cloth must now pass a second washing. In the mean time, it will be well to prepare your vat to receive the cloth for the last time. Put four or five pounds of wood-ash powdered, into the vat. This will fix the colour and render the colour brighter. The wood-ash should be put into the vat when the water

three times of colouring, that is after the dye has done work, or when the dyer has done using it for that time.

After this the dye should be kept close till it is re-heat for another colouring. The dyer must be careful in hot weather to heat the vat once in a month, or six weeks to preserve it. He must also take off the maggots which will appear on the vat above the surface of the dye.

When the liquor becomes thick and glutinous, by use, the dye must be boiled the scum taken off and the dye returned to the vat. At the same time add a little Lime-water, to clarify the dye and settle the grounds; for if the sediment rise the colour will not be good.

The dyer should never dip his goods till the grounds are well settled.

N. B. After colouring deep blues, the dyer may use his vat to colour various shades of the sky blue, which will answer a better purpose now when his dye is weak.

Of the Indigo vat with urine.

Take one pound of Indigo, beat it small, then add to it one quart of sharp vinegar ; being put into a small kettle, let them simmer over a slow fire, for twenty-four hours. As the vinegar evaporates add more. If the Indigo be not all dissolved by this process, it must be taken off and ground in a mortar, or with a cannon ball, in the same liquor ; occasionally adding, a little urine ; put in two ounces of Madder, mix it well with a stick.

In the next place put this composition, into a cask or vat of urine, which will contain fifteen gallons, mix all well together. Stir your tub or vat with a stick, morning and evening, for eight or ten days, till the surface of the liquor, being agitated appear green producing a froth like the common blue vat. In this state your dye is fit for colouring. These vats are very convenient for the dying of wool and woollen yarn. Families may employ them at their pleasure, and make them large or small, at the same time

attending to the suitable proportions of Indigo and Madder, as above prescribed.

When the dye becomes thick and glutinous, the whole should be boiled and the foam taken off.

Observing these directions, your dye will last many years.

N B. The vat must not be crowded; two or three pounds of cloth or yarn is sufficient for one colouring in a vat which will contain a barrel.

C H A P IV.

For Navy Blue.

THE Navy blue is a cheap and good colour; its tint is beautiful and it leaves cloth soft and pliable. The Indigo blue is expensive, and its colour is obtained with much care and trouble.

The former being nearly as handsome, will of consequence be much more used.

To produce this colour, the copper or chaldron must be cleansed and then filled with pure water. For twenty yards of fulled, or thick cloth put into the copper one pound and an half of good green Copperas ; let the water boil and take off the scum that rises. This being done, your cloth wet in warm water is to be dipped in the dye for twenty minutes; then cool it over the folding board; after this, dip your cloth again, for two hours, then cool again and rinse your cloth well in a running stream.

Now empty the copper and fill it again with clean water. At this time you must have about six pounds of good Logwood, well boiled, by itself. Bring the water in your copper to boil; then add about one pail-full of the Logwood dye to the copper, stir it well together, and then dip the cloth about half an hour; then cool, following this process till the colour designed is obtained, This is a very dark blue. Rinse your cloth well, in order for dressing.

This colour will bear well the heat of the

press. Woolen yarn, for coverlets, stockings, &c. may, in this way be coloured to advantage.

Thin cloths are beautifully coloured in this way.

CHAP. V.

For Raven black, or Crow colour.

THE copper is to be filled, with clean water and brought to boil. For twenty yards of fulled cloth, put in one pound and an half of good Roman vitriol. After it be well dissolved, dip the cloth for half an hour; then cool it—after this dip for two hours; cool it again and rinse it. In the next place the copper must be emptied and filled again with clean water. Put in half a bushel of Sumach berries, if they can be obtained; a pailful of Alder ~~Bark~~ and one pound of Madder. Boil them well in the copper. Then dip your cloth half an hour—then cool it. After this add from time to

time the liquor of Logwood, as in the navy blue till the colour is obtained. Now rinse your cloth for dressing. Be careful and not heat your press too hot; if you do it will change the colour and you will find it difficult, ever, to restore it.

N. B. Cloth of this and almost all colours must be kept open, while running on the reel.

If this be neglected, the cloth will be spotted and unfit for use.

Many dyers let their cloth lie, in the copper, and then, cannot account why the colour is uneven; but if they would attend to their dye they would avoid reproach, and their customers would find no reason of complaint.

For Black.

Many have considered this, as a difficult colour to produce. Various methods are employed to obtain it. The following is the best we have found. To colour twenty yards of thick cloth in the first place the copper must be put in order, for laying the ground of the dye. After the water is put in, add

about one bushel of yellow oak bark ; if that cannot be obtained, employ an equal quantity of walnut bark. Boil it for four or five hours. Then take out the bark and add to the dye two pounds of good Copperas. Let it desolve, then dip the cloth for half an hour. Cool and repeat dipping three, or four times. The cloth will then appear of a heavy, or dead olive colour. Rinse the cloth well in running water. Now empty the copper and fill it again, with clean water ; bring it to boil, then add the liquor of Logwood, as in the Navy blue, till the colour is obtained. Now rinse the cloth for dressing.

Good, bright, blacks are easily obtained by this process.

Old goods will easily receive this colour though the dye be not so strong as what we have prescribed for new cloth.

Silk also will receive it easily, but the dye must be very strong.

Any person may colour black by small quantities in this way without any great exactness, as to the ingredients employed, and with little trouble.

N. B. Navy blue, jet black and Raven black, or Crow colours, and deep Indigo blues, should be well scoured in the mill in a weak suds; otherwise they will crock and be troublesome.

CHAP. VI.

Recipe for light and dark Cinnamon, London browns, and British muds.

ALL these are obtained from the same pool, or dye.

For twenty yards of fulled cloth; when the copper is filled, with pure water, and brought to boil, the dyer must put in three pounds of good Camwood; let it boil in the copper fifteen minutes; then dip your cloth, for two hours. Keep it open and running over the reel; then take up the cloth for cooling. Add, as before, three pounds of Camwood, and dip your cloth again according to the

same prescription. Then the light Cinnamon is obtained and the cloth may be rinsed for dressing.

For the next process, add to your dye a small handful of Roman vitriol—two table spoonfuls of oil of vitriol and one of good copperas. Let them simmer well in the copper. Take off the scum, or filth that rises on the dye; stir it well; then dip your cloth that is coloured light Cinnamon.

Follow this for half an hour; turning the reel briskly, that the colour may be even; by this the dark Cinnamon is obtained.

From the dark Cinnamon, the dyer will obtain a London brown, by adding Copperas to his dye and dipping his cloth, from time to time till it acquires the shade he chooses.

British mud is still darker, being almost a black. After the London brown is obtained add the liquor of Logwood to the same dye, united with a little Copperas; then dip your London brown, from time to time till you obtain the shade designed.

Those various colours, obtained by conforming to the foregoing prescription are

strong and good. Those of them, that are dark, will neither fade, nor spot. The strongest acids will not move them.

N. B. In these colours, excepting the light Cinnamon, the oil of vitriol must never be neglected. By this ingredient the colours are rendered bright and clear.

In this dye, you may colour an almost numberless variety of shades, which exist between the light Cinnamon and the, almost, black, British mud.

After finishing the high colours, a little bark of almost any kind may be added to the dye, which will then give you good browns on coarse cloths for common use. This is worthy the dyers observance.

Observe in general, that you never put in the oil of vitriol, until the ground of the colour is laid in the cloth; for if the dyer add ever so much Camwood after the oil is in, it will be entirely lost.

C H A P. VII.

For Saxon Green.

TAKE three ounces of good Indigo, pound or levigate it so small, as to run it through a fine sieve. Put your Indigo, thus prepared, into a small vessel, gradually add one pound of the oil of vitroil stirring it for one hour. It may then stand for a day, excepting, two or three times, in this period, it should be worked in the same manner by stirring it. After this process it is fit for use.

In this state, the compound may be preserved for a year, being put into a glass bottle and confined with a stopper of Beeswax. It is the better way, to prepare a number of pounds of the oil, with their proportions of Indigo; observing to shake, or stir the ingredients well together, when you wish to pour off for use. Thick cloth must not be dyed till it is napped, shorn and all the nubs picked off.

For twenty yards of fulled cloth, twenty five yards of baize, or thirty yards of thin cloth; take ten pounds of good Fustick, chipped fine and put it into the copper filled with clean water. Bring the water almost to boil.

Apply this heat for eight or nine hours. Then take out the chips, and lay them where they will dry; for they may be afterwards profitably employed in common drab colours.

Now have the dye hot and dip your cloth for half an hour. Then take it up for cooling. Add four pounds of Allum to the dye and take off the filth that rises. Now dip again for an hour; then take up the cloth, bring the dye to boil, and put in seven, or eight spoonfuls of the compound of oil of vitriol and Indigo. Let the dye boil a few minutes, stir it well, then dip the cloth half an hour, turn the reel briskly and keep the cloth open. Now take it up to cool. In this manner repeat dipping and cooling till the colour is obtained. Then rinse and dry it for dressing.

Now without the addition of any more dyestuff; ten or twelve yards may be coloured in the same dye, of a beautiful pea green, by dipping two or three times. The cloth also will retain the colour tolerably well.

Bottle Green.

Two methods are employed, to obtain this colour. By the first the cloth is brought to a dark Saxon green; in the next place the process is the same that is followed in navy blue.

But the colour is not bright when obtained, and is attended with more expence and trouble than the second method, which we shall recommend.

The prescription, for twenty yards of full-ed cloth. Run or dip it in vitriol water, in the same manner, as for Raven black; then rinse the cloth and empty the copper. In the next place take six pounds of good Fustick chips, and four pounds of Logwood chips; boil them well in the copper for four or five hours. Then dip the cloth for half an hour; then cool it, and thus proceed

till the colour is obtained. After this rinse and dry it for dressing.

N. B. If there be two drafts, or packs of cloth to colour; take out part of the liquor, that the dye may equally colour each pack, by occasionally adding the liquor again as you need it.

CHAP VIII.

For Saxon Blue.

BY one simple process, this colour is obtained. All the utensils must be perfectly clean; the water in the copper be brought to boil.

Then put in a small quantity of the compound made of oil of vitriol and Indigo; after this let it boil for a few minutes; the cloth being well wet with warm water, is then to be dipped for half an hour; then take it up to cool. Follow this process of dipping

and cooling until you obtain the colour you desire.

N. B. The reel must be turned briskly and the cloth kept open as it runs.

C H A P. IX.

For Snuff Brown.

TAKE twenty yards of fulled cloth, run it in a Copperas liquor, the same as for Navy blue. Rinse the cloth, empty the copper. Next fill it with clean water, put in ten pounds of Fustick chips and one bushel of Butternut bark ; boil them for four or five hours ; then dip the cloth for half an hour ; take it up to cool, and follow the process of dipping and cooling, till you obtain the colour designed.

Hemlock bark will answer, as a substitute, for Butternut ; but its colour is not so good, nor so durable.

N. B. In this colour, it is the better way to have the liquor of Fustick, and of Butternut, boiled separately, and put into tubs to be employed as occasion requires. If the dye do not bear sufficiently upon the yellow, add to it the liquor of Fustick ; if the red be wanting, employ the liquor of Butternut.

By this method, the dyer may induce the colour to meet his fancy.

Having obtained the first object of the dye, if you wish to colour common browns, add to it the barks of yellow oak and hemlock ; boil them well in the dye and then you may obtain a variety of shades on the brown.

Remember, also, that your cloth must be well Copperated before you run it in the dye.

N. B. When you have obtained the snuff brown, by adding a little of the decoction of Logwood the same dye by further dipping will produce a London smock.

P. S. By running cloth, which has either of these colours, in a weak solution of Pearl-ash, will give it more of a red cast.

C H A P. X.

For Scarlet.

THIS is styled the king of colours. But a few year since, the scarlet was first produced from the dyes of this country. An opinion generally circulated, that the waters of America would not answer in this dye; and also that a vessel of silver, or pure block-tin was necessary to contain the scarlet dye. However, experience has taught us, that these opinions are erroneous and groundless.

The waters of this country are as pure and soft, as those of Europe. And a brass, or copper caldron, if well cleansed, will leave the colour as clean and bright as any vessel whatever. Brass is to be preferred, since it is kept bright, with less trouble.

To produce a neat scarlet upon cloths, they must be milled, napped and shorne, fit for the press, before they be dyed; as dress-

ing will tarnish the colour; beside, this method will save much dyestuff, which comes highly charged.

After the cloth is well dressed for the dye, for seven pounds of cloth, take one pound of *Aquafortis duplex* and one pound of water; put them in a glass vessel; add one ounce of *Salamonicæ*, gradually, having it pounded fine, add half an ounce of *Salnitre*, in the same manner, shake them together, till the salts are dissolved; then add to the compound, three ounces of *granulated tin*; introduce it gradually, till it is all in. It will be well to let, or mix it in the morning, then it will be ready for use, the next morning. So soon as the tin is principally dissolved, make the vessel close, with a glass or Beeswax stopper. This is then called the *composition for scarlet*.

The cloth being well cleansed and wet, in order for dying, fill the copper with pure water; put in three pounds of wheat bran, enclosed in a bag, made for that use and tied closely. Let the water boil; then take out the bag of bran. Add to the dye one ounce

and an half of *creamtartar* ; well pulverised. Let it boil a few minutes ; then add two ounces of *Cochineal*. Boil fifteen minutes ; then introduce one third of the composition, already prepared, and the dye will change from a deep, to a blood red.

Now dip the cloth for an hour ; keep the cloth spread, and let it run briskly on the reel. Take it up to cool ; add to the dye as before and dip for an hour ; take up and cool again ; add, dip and cool the third time, in the same manner. Now put into the dye, two table spoonfuls of *Turmerech*, well levigated ; boil a few minutes ; dip the cloth half an hour which will be the fourth and last dipping ; then take up and rinse it well for drying and pressing.

You will observe, that the process, as we have stated it, requires six ounces of *Cochineal*, five ounces of *creamtartar*, one ounce of *Salamoniac*, half an ounce of *Salnitre*, or *Saltpetre*, three ounces of *granulated tin*, together with the *Turmerech* mentioned in the prescription. These will colour seven pounds of cloth, or other goods in proportion, a

beautiful scarlet; equal to any that is imported.

P. S. Grain-tin is a mettle by itself; it comes in various forms and sizes, from half an ounce, to half a pound in weight. It gives a bright appearance.

To granulate this tin is to reduce it into small particles, or grains, which is done, in the following manner. Take the grain-tin and melt it down, over a hot fire; then hold it, about two feet, above a pailful of clean water, and by shaking the hand, gradually drop it into the water. Then take it out and dry it for use.

N. B In colouring, be careful to pour none of the sediment, of the composition into the dye.

Take off all the filth that rises on the surface, previous to each dipping.

Enter your goods when the dye is boiling.

After the cloth is well rinsed, lay the nap with a clean brush; then tenter. After the cloth is dried, take out all specks, in the cloth, with tweezers. Press in clean papers, not

hot; for the heat of the press tarnishes the colour, or makes it too red.

Barry Red.

This colour is obtained in the same method as the scarlet, excepting these; it requires but one half of the composition for scarlet, and one ounce and an half of Cochineal for every pound of cloth, together with two ounces of Alum. The cloth you will dip three times as in scarlet, and put in one third of the Alum each time previous to dipping; then rinse for drying and pressing.

The barry is but little employed, except on some fine cloths for costly persons. This colour reflects a shining lustre; it is beautiful, permanent and very expensive.

Orange colour.

This is red and yellow united. Various methods procure it; and it will be bright, or dull according to the ingredients employed to obtain it.

The best and brightest orange is raised by first colouring the cloth scarlet, and then dip-

ping it in a yellow dye made of Termerech and Fustick.

Also it may be obtained by colouring the cloth crimson and then yellow; or first dipping in Redwood, or a madder dye, and afterwards in the yellow dye.

However, this colour, on woolens, is not much used in this country.

C H A P. XI.

For Crimson.

THIS is the natural colour, which Cochineal gives to woolens when boiled in Alum and Tartar.

Recipe. Fill the copper with clean water; for twenty pounds of fulled cloth, put into the copper two pound and an half of Alum; three fourths of a pound of cream-tartar; and four quarts of wheat bran, having the flower well sifted from it. Let these boil in the copper till the Alum and

Tartar be dissolved. Then dip the cloth for an hour ; take it up to cool ; then dip three hours. In this dipping, for the greater part of the time the cloth may lie in the liquor ; being careful, however, to keep it under the surface of the dye, that it may equally receive the salts. When the cloth is taken up cool it well ; then fold it, and cover it, for two or three days ; in the mean time observe to fold it over once or twice in a day. After this rinse your cloth thoroughly in a stream of water.

When this is done the cloth will give you the colour of a dark cream, and is prepared to receive the Cochineal. Now empty the copper and supply it with fresh water.

When it begins to boil, put in half an ounce of Cochineal and half an ounce of creamtartar pulverised to every pound of cloth. Let it boil for twenty minutes ; then dip the cloth for one hour ; take up and cool. Add as much more of the Cochineal, to the dye, as you put in the first time. Proceed to dip and cool as before, for two or three times ; now the pores of the wool will re-

ceive the Cochineal, which will bestow on the cloth a beautiful crimson, that is permanent.

Now rinse and dry for pressing.

N. B. All cloth designed to be coloured, should be napped, shorne and the nubs cut off, before it is dyed.

C H A P. XII.

For Madder red.

THE preparation for this dye is similar to that of crimson. For one pound of cloth, put in the copper four ounces of Alum, one ounce of red Tartar, and the same quantity of wheat bran as you employ in crimson. Observe the same process in dipping and cooling.

For the next process empty, and fill your copper again. When the water has acquired the warmth that you can just endure your hand in it; for every pound of cloth, put in half a pound of the best Madder. Be care-

ful to mix it well in the copper, before you introduce the cloth. Then dip for an hour. Observe, at the same time, that the dye must not have more than half the hear, which would be necessary to boil it. If the dye be too hot, it will tarnish the colour.

Having dipped, for one hour, take up the cloth for cooling. Then dip, short dips two or three times, that the colour may be equal and the strength of the **Madder** received.

N. B. It is a good method to soak the **Madder**, several hours in four beer, or four bran water, before it is employed in the dye.

Madder-red is a beautiful and permanent colour.

C H A P. XIII.

For Pink colour.

THIS is a faint red. The best are obtained in the scarlet dye. The other method to obtain it is in the crimson, or

madder dye ; but this does not afford so good, or so bright a colour.

Pinks are generally used for womens skirts ; and sometimes for bed coverings.

The dyer may colour good pinks in the same liquor, whence he has obtained his scarlet, before he has put in the Termerech. Termerech tarnishes the pink. Add, to the dye, about half an ounce of Cochineal, to every pound of cloth. Dip two hours, then cool and rinse for pressing.

There will be a sufficient quantity of spirits left in the scarlet dye, after you have coloured twenty pounds of cloth, to give a good pink colour to seven or eight pounds more.

If you colour pinks in a crimson, or madder dye, proportion your dyestuff according to the shade required.

This method of colouring pinks will be a saving to the dyer

If you have pinks to colour and no scarlet, proceed in the same way, as for scarlet ; observing, at the same time, that pinks will not require more than one third of the dyestuff, which you put in for full scarlet.

If the dyer wish to colour Leloch; take the cloth after it is dyed scarlet pick, and run it in a weak liquor of Logwood adding to it, one, or two table spoonfuls of the oil of vitriol, for six or seven yards of cloth. Let it boil, for a few minutes after the oil is in before you dip the cloth.

N. B. By adding to, or diminishing the strength of the dyestuff, you may produce a variety of shades, in colouring pink and Leloch.

C H A P. XIV.

For Purple.

IN the first ages of the world, this was esteemed the richest of all colours. Purple was the colour of garments that designated men, who were distinguished, by their civil and religious stations.

That beautiful colour is obtained from a shell fish, resembling the Oyster. It is

taken on the coast of Palestine. Without any other ingredient, this fish, called the purple, gives a bright and lasting colour to all goods that have received its impression. But this dyestuff comes so highly charged, that it has never been much employed in any part of Europe.

The Grecians found a substitute, for this purple in a plant, or was what they called *Amorgis*. But neither of these methods will ever be attended in this part of the world, as both are expensive,

For the purples now obtained, you must make dye for crimson and bring your cloth to that colour according to the method prescribed for that dye. After this dip your cloth in the blue vat until it has obtained the purple shade, which you choose to impress. The colour will be bright and permanent.

N. B. For purple, dip the cloth in the Indigo vat when the dye is weak.

It is much the better method, to nap well, and shear the cloth, before it is coloured.

When dyed, rinse it thoroughly. You would do well to scour it through the mill,

in a weak suds, after it is rinsed; that the cloth may be cleansed from the disagreeable smell, which it takes from the blue vat.

C H A P. XV.

Claret from Redwood,

THIS colour is but little used at the present day, because it soon fades. Almost any acid liquor will spot it. Camwood will produce, almost as bright a claret, as Redwood, and its colour is durable.

Prescription for claret from Redwood.

The cloth must be well prepared in Alum and red Tartar. The copper being filled with clean water, for twenty yards of fulled cloth, put in three pounds of Alum and half a pound of red Tartar. Let them boil, till well dissolved. Then dip the cloth for half an hour; cool it, then dip three hours: After this, cool and rinse well the cloth in run-

ning water. Now empty the copper and fill again with water. Put in nine pounds of Redwood and two pounds of Logwood, chipped very fine. Boil them three or four hours; then dip the cloth for half an hour; then darken the shade with Verdegrise. The Verdegrise must be ground with urine to a paste, of the same consistency as the oil and Indigo for green. The dyer will add about one tea-spoonful of the Verdegrise, thus prepared, to the dye, mixing it well with the liquor; then dip half an hour; then cool. Thus proceed till the colour desired is obtained.

If the dyer wish to colour Redwood red, he must omit the Logwood and Verdegrise, and add a little more Redwood.

Some dyers darken the shade with Copperas; but it will not give so bright a colour as Verdegrise. But, as has been observed, this colour soon fades.

However, upon some goods, Redwood will bestow a good colour, by observing the following direction. Prepare your goods, as before prescribed, and put them into a brass

kettle, with the Redwood. Let them soak for nine or ten days. By this method you may obtain a good red, on yarn, which will bear washing in soap suds, which will render the colour darker and brighter. In this way women may colour their own yarn; but cloth will not receive the colour equally.

C H A P. XVI.

Buff, or cream colour.

THIS is but little used, except in men's small clothes. To produce this colour, for twenty yards of fulled cloth, fill the copper with pure water; all the things employed must be perfectly clean; bring the water almost to boil; then put in one quart of clear and strong Fuslick liquor; mix it well with the water; then dip the cloth an hour; keep it open, and run it briskly over the reel. When the cloth is taken up, the

dyer will hardly perceive it has changed from the colour of the wool.

Now add to the dye about half a table-spoonful of clear oil vitriol; then dip for half an hour; cool the cloth, and if it be not sufficiently dark add a little more of the oil and dip again; perhaps repeated dippings may be required.

However, this colour is apt to be too dark rather than light. When the colour is obtained, the dyer must pay strict attention and rinse the cloth immediately, lest it collect dirt and spots. This colour is beautiful, permanent and will endure washing.

C H A P. XVII.

For ash colour, with Nutgals.

FOR twenty yards of fulled cloth, put into the copper three or four table-spoonfuls of the flour of Nutgals, that is, they must be well levigated. Let the dye

boil for half an hour ; then dip half an hour ; take up and cool the cloth. Now add to the dye a piece of Alum about the size of a Quail's egg ; let it boil, being careful to take off the filth that rises on the surface of the dye.

Now dip the cloth half an hour, keeping it open and running on the reel ; take up and cool it. Now add to the dye a tea-spoonful of Copperas and dip as before, till the colour be obtained.

If the dyer think proper, he may increase the quantity of Copperas as the colour darkens ; however he need be cautious, how he employs it. Experience will soon teach him. Where Nutgals cannot be obtained, ash may be coloured with barks. For the quantity of cloth, above named, take one peck of yellow birch bark, as much of white ash bark, well rolled, and two quarts of Sassafras bark, boil them well together for two or three hours ; then take out all the barks and dip two, or three times, as in other dyes ; then the cloth is said to be grounded, or to have received the foundation of the colour. After

this darken the shade, by the addition of Copperas, the same as in the dye of Nutgals, only this will require a little more Copperas.

This method of dying ash, produces a decent colour.

For Slate.

When the cloth has obtained a dark ash, either from Nutgals, or barks, run it in a weak decoction of Logwood. Repeat the operation; if necessary, add a little Copperas untill the colour desired, is produced.

At first, Slate appears beautiful; but it soon fades, and leaves to the cloth, only a poor, dirty, ash colour.

C H A P. XVIII.

For Forest Drab.

THIS colour is much used, on cloths for great coats and is suitable for such garments.

For twenty yards of fulled coth; your copper being filled with pure water, put in a pailful of Sumach, chipped fine, one pound of Fustick, half a pail of Alder bark and two ounces of Nutgals, well pounded. Boil them together three, or four hours. Now dip half an hour; then cool. Observe this process of dipping and cooling two, or three times. However previous to dipping the last time, put in a piece of Alum, the bigness of a Quail's egg.

See that the scum is taken off, every time you dip. Having dipped once after the Alum is in, the cloth will obtain its ground work.

Take it up, and add a small handful of Copperas to the dye; then dip the cloth half an hour; take up and cool. Thus proceed, till the colour desired is obtained.

N. B. Increase the quantity of Copperas every time you dip the cloth. Rinse well for dressing.

This colour is inclined to darken.

P. S. By adding a little yellow oak, Hemlock, or Butternut bark to the dye, and boiling it

well, a cheap and good brown colour may be produced, which many people prefer for common use.

CHAP. XIX.

For Sage Green.

THIS colour is obtained with ease and little expense.

Ground your cloth in the husks or shells of the walnut, and darken it with the compound of oil vitriol and Indigo.

For twenty yards of fulled cloth, put into the copper of clean water, one pailful of walnut shells. Boil them well for three hours; then dip two or three times for grounding. After this, add one table-spoonful of the compound; stir the dye; then dip half an hour; take up and cool; thus proceed from time to time till the colour meets your fancy.

This green, resembling the Sage leaf, when, in fashion, appears beautiful.

If the compound be of a red and red Tartar employed, in lieu of the former being dipped in the ground water the cloth will present you a fawn colour which is durable.

Pea Green.

When you have coloured the cotton greens, being careful that the dye is warm; cloth being well wet, with warm water is introduced to that dye, to colour pea green. Dip it in the dye two, or three times for half an hour, each time. This is a faint colour, and must be attended with care to preserve it from spotting.

C H A P. XX.

Pearl colour.

PEARL is a light brown bearing on the blue. It appears to have passed,

but a small change from the white. No colour is more delicate; none more difficult to obtain.

Dyers in general, give the Pearl too dark a shade. Great attention must be bestowed, to fix the proper tint, which deserves the name of Pearl colour.

All utensils must be as clean, as though you were to handle fine Holland cloth without sulleying it.

The copper being filled, with water, it should boil; then put in one tea-spoonful of ~~nutgals~~, well pounded and sifted; boil them ~~for~~ ^{for} ~~ten~~ ^{ten} minutes. Twenty yards of fulled ~~being~~ ^{being} well wet, in warm water, ~~for~~ ^{for} half an hour; take up and cool.

Add to the dye the same quantity of ~~nutgals~~ ^{nutgals}; then dip and cool as before. Put ~~the~~ ^{the} same quantity of Nutgals; then dip and cool as before.

Now add to the dye a piece of Copperas the size of a snow-bird's egg, a piece of Alum the size of a walnut, and half a tea-spoonful of the compound, oil vitriol and Indigo; let them boil stirring them well together; then

dip as before; cool, and thus proceed, by dipping and cooling, leave out the Copperas and gradually increase the compound of the oil every time the cloth is entered.

Perhaps the cloth, from the first, to the last of the process, must be dipped eight or ten times. Strict attention must be given to these prescriptions. By a careful conformity to them the colour will be full, light, and beautiful. Now rinse for dressing. Nap with cards, or jacks, that are perfectly clean.

Take that side of the cloth, which is the most even, for the face.

C H A P. XXI.

For dark Drab brown.

FOR twenty yards of fulled cloth, put into the copper half a bushel of Hemlock bark and one peck of yellow oak, or walnut bark; boil them till the strength of the barks is extracted; then take out the

bark. Dip and cool, two or three times, as in laying the ground of other dyes. Then raise the colour with Copperas; dipping and cooling, until it become as dark as you desire.

However, the dyer, if he please may prepare his cloth, in Copperas, the same, as in Navy blue, and then run it in the decoction above mentioned.

CHAP. XXII.

Olive Green.

IN this colour, the yellow shade predominates, and is connected with a tincture of the light blue. To obtain this colour, bring the cloth up to a full yellow; then add the compound of oil and Indigo, in small quantities. Dip the cloth a number of times, until its colour meet your fancy.

This colour is bright, and is not so much

disposed to fade as some others; neither is it so durable as some.

Sea Green.

By various methods, this colour is obtained. Its appearance is dull and heavy. However, it is like many others, sometimes fashionable.

The best method of procuring a sea green; is to make the cloth a Saxon green; not so full of yellow and bearing more on the blue, than a bright green. Rinse your cloth; make a new liquor of Butternut or Hemlock bark; dip the cloth and darken the shade with Coperas. Dip the cloth two or three times; if it do not darken to your wish, add a small quantity of Logwood liquor; then dip till it suits. Now cool and rinse for dressing.

Fawn colour.

This is a lightish sandy brown; being very permanent, it is called one of the primitive colours. The better way, to produce it is by observing the following *recipe*. For

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twenty yards of fulled cloth, take two pailfuls of Walnut shells, or husks, put them into the copper with clean water. Let them boil thoroughly; then dip two or three times. Now add four ounces of crude, or red Tartar; dip again and the colour will be good and durable, obtained with ease and little expense.

N. B. The shells of the walnuts should be gathered and secured immediately after the the nut is ripe.

C H A P. XXIII.

Yellow.

THIS is frequently needed for baize; and sometimes to mix with other dye-stuff; such as greens and snuff browns and in a number of other shades, which, without yellow, could not be obtained; hence this colour is of importance to all dyers.

Termerech produces the best yellow. For twenty yards of fulled cloth, put into the copper, two pounds of Alum and four ounces of cream tartar; let them be well dissolved; then boil the dye and dip the cloth, two or three times, for an hour each time, cool as often as you dip. Now rinse the cloth, empty the copper, and fill with clean water. When the water boils, having the Termerech well pounded, add four or five table-spoonfuls of it to the dye; boil a few minutes, then dip the cloth half an hour; cool, and thus proceed until the colour meets your fancy.

This colour is bright and lively.

By this method, you may obtain an innumerable variety of shades, that may exist between the straw colour and the full yellow. However, it is expensive, and is not much employed on cloths in America.

N. B. The dyer will remember the lighter the shade is, which he means to give, in the same proportion, he must decrease the quantity of *Alum* and *Tartar*.

In lieu of Termerech, yellow may be coloured with Fustick liquor. Add, according to the shade you choose to produce. However, this colour is not bright, but looks dull; yet it will make good greens and other colours, on the brown shade.

C H A P. XXIV.

Olive Brown.

THIS colour is easily obtained. First, Copperas the cloth as in Navy blue, only here for twenty yards of cloth, add to the Copperas liquor half a pound of Roman vitriol. Empty and make a new liquor, of Fustick, add ten pounds; dip the cloth two, or three times till the colour rises to your pleasure. Then rinse and dry for dressing. This colour will appear dark, bright and lively.

Observations.

Having attempted to render the prescriptions for the colours, in the previous work, as plain and intelligible as possible; the dyer may easily follow them. If he will attend to the nature of various dyestuffs and observe how they agree, or disagree, when mixed; he will, in conformity to the foregoing *Recipes*, soon be able to fix on any colour or pattern that may be presented to him.

Though there be but seven primitive colours in nature, yet an almost infinite variety of shades may be attained from them. Too many to enumerate, in so small a volume.

To avoid repetitions, in the prescriptions given, for various dyes, mark this as a standing rule: If the dye boil when you are ready to enter the cloth, check it with two or three quarts of cold water, and stir the liquor well before dipping.

This should always be observed, except in scarlet, barry, crimson and pinks, these

should be entered, when the dye is boiling and the dye kept as hot as possible while dipping.

C H A P. XXV.

On whitening woollen cloth.

A CLOSE, convenient room is necessary for this purpose. It should be prepared with window-shutters, which may be thrown open, when necessary. A sufficient quantity of tenterhooks should be placed in the joists to hold up the cloth while whitening. The cloth being clean and moist, not so wet as to drip, the workman hangs it, by the selvage, on the hooks; beginning at one end and proceeding to the other, keeping it spread, that one part may not fold on another. For twenty yards of cloth take two pounds of sulphur, grossly beaten, put it into three, or four iron pans or kettles, placed in different parts of the room; sprinkle ashes

over the sulphur, and set it on fire; shut the room close for ten hours. Then, going the outside, throw open the window-shutters, to let the sulphurous vapour blow off. For any person to enter such a room before it is ventilated, he would be in danger of suffocation.

By this procedure, woolen cloth may be rendered as white as fine India shirting.

Stockings, or hose and other small things may be whitened under a long tub.

C H A P. XXVI.

On mixing colours three by three.

“BLUE, red and yellow, produce ruddy olives, greenish greys and other colours of the same kind.

“When the mixture contains blue it is usual to begin with that colour.

“Blue, red and fawn produce from the darkest to the lightest.

“Blue, red and black produce a numerous variety of all shades.

“Blue, yellow and fawn produce greens and olives of all kinds.

“Blue, yellow and black produce all dark greens to a black.

“Blue, fawn and black produce olives and greenish greys. Red, yellow and fawn produce orange and gold colour, burnt cinnamon and tobacco colours of all kinds.

“Red, yellow and black produce a colour, which resembles a withered leaf.

“Lastly from yellow fawn and black, you obtain hair colour, nut brown &c.

“Four of these colours may be mixed together, and sometimes five; but this is not usual.

“It is needless to enlarge upon this subject. I shall only observe, that forty different shades may be obtained from each colour.

“The design of this enumeration is only to give a general idea of the ingredients, that are proper, for the production of colours composed of several others.”

C H A P. XXVII.

*For dying and dressing Fustian, Cotton and
Linen.*

THE cloth designed for Fustian, whether waled, or plain. The waled Fustian is so woven, that the filling lies on that side of the cloth designed for the face. The plain, is woven, like common cloth. The filling must be cotton, beaten up closely, that it may bear napping. Your cloth should be napped, before it is coloured, that the dye may penetrate into the pores of the stuff.

Cotton and linen cloth is hard to be coloured.

To nap Fustian, you should have a stool to nap over ; one that will stand firmly ; it may be twenty inches wide, covered, and a little crowning in the middle, with a design for the Teasels to take hold on the cotton to raise a nap.

Hook, or make fast the cloth, to the edge of the stool ; opposite to the side on which the workman stands. Draw the cloth so that it may not rinkle, while napping ; if it should, Teasels taking strong hold, might tear and injure the cloth. The cloth being thus prepared, begin at one end ; having two hands of Teasels, draw one after the other, on the cloth, till a thick nap is raised. Thus proceed until you have finished the piece.

Cut off, with small shears, all nubs that appear.

They ought not to be extracted, with Tweazers, for they will leave holes in the cloth.

If Teasels cannot be obtained, the nap must be raised with clothiers *jacks*. Their teeth must be sharpened on a grindstone. However, this is an uncomfortable way to nap Fustian. Teasels are much cheaper and better. Every clothier ought to cultivate them, which he may do, with little trouble.

Fustian may be napped and shorn, till it will appear as beautiful as broad-cloth ; but

it will be expensive to the clothier, and unprofitable to the owner.

For twenty yards of wa'ed Fustian, or twenty-five of plain well napped and ready for the dye; fill the copper with clean water, put in one pound and an half of Copperas and one pound of Roman vitriol; boil them together and take off the filth that rises. Then dip; keep the cloth open on the reel; run it briskly for one hour; at the same time give as much heat to your dye as possible. Now take up to cool; dip again, in the same liquor, for two hours; then take up, cool and rinse the cloth well. Empty the copper and fill again with water; put in eight pounds of good Fustick, chipped small; boil it four or five hours; then dip an hour; take up and cool; dip and cool again, and so proceed till the colour rise to the pattern you choose.

Rinse well, and after the cloth is dry, raise the nap with jacks and give a light pressing.

This method is to be preferred, as it leaves the colour bright and clear.

If the dyer wish to give a lighter shade, he must employ less of the Copperas and vitriol, in proportion. Experience will soon teach him the proportion of these, to fix on the shade which he designs to produce.

There are other methods used, to obtain this colour. Some, first run the cloth in Fustick liquor and raise the lustre, with Roman vitriol; and then darken with Copperas; all which is done in the same pool or dye. This will give a good colour; but it is hard to darken and, when obtained, it is not so bright, nor so durable as the one first mentioned.

Some raise the colour with Alum; but this is the poorest method of any that is employed to obtain it. The Alum leaves the cloth harsh and brittle; beside, it is nearly impossible to darken the colour.

Dark Olive green, on linen and cotton.

Sometimes, on Fustians, this colour is fashionable. Prepare the cloth as before; for twenty yards of waled, or twenty-five of plain cloth; put in the copper, two pounds

of Roman vitriol; let it boil; then dip two, or three hours; keep the liquor hot while dipping. Then cool and rinse clean; make a new pool, with eight pounds of Fustick and four pounds of Logwood. Boil them well together; then dip and cool, from time to time, till the colour meet your fancy. Now rinse and dress as for other Fustian.

CH A P. XXVIII.

Blue dye for Lincn and Cotton.

TO obtain this colour, in the cold water vat, the dyer should have two vats, each one containing about two barrels. They should be about three feet high, that the skeins, when hung in the vat, may not disturb the grounds at the bottom.

There should be two vats, in order when one is weak, the yarn may in the other be brought up to a full colour; and also when

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one in strength is employed, the other may be replenished with dyestuff.

To raise, or set a new vat, it should be about two thirds full of clean water; it should stand in the sun or in some warm corner of a room. Put in four quarts of good malt and as much wheat bran; from both, all the flower should be sifted.

Stir the dye once or twice a day, for four or five days. Next put in six pounds of Potash dissolved in warm water, and one pound of good Madder; stir the dye well. Take two pound of well chosen Indigo, grind it well and turn it in after the same manner as in the woollen vat. Stir again, that the ingredients may be united. Now it may stand, excepting it should be stirred once in twelve hours.

If the weather be warm, perhaps, the dye will begin to work in fourteen, or twenty days. You will know when this takes place from the liquor, which will give you a dark green appearance, and a little froth or head will rise on the surface of the dye.

Now the dye should be plunged, with a rake, once a day, till it is in a proper state for dying.

If the dye will work, in five or six weeks, it will do well, and last several years, if no dirty yarn, or greasy goods be entered.

When the dye is in a proper state for colouring, it will appear of a dark green, and a deep blue froth or head, will continue to float on the top of the liquor. Without these tokens, it will not colour.

When the dye becomes weak, replenish it with Indigo, Potash and Madder, in the quantities before prescribed.

N. B. When the dye is replenished, a quart of malt and as much wheat bran must be added to keep it alive. The dye will be fit for colouring again in four or five days.

The yarn, in order for dipping, should be cleansed from all filth; the skeins should be let down singly, with a stick run through them, which will rest on the top of the vat.

By this the dyer may shift the yarn, which must be strictly attended, in order that the skeins may equally receive the colour.

When the yarn is as dark as you wish, take it up, wring, rinse and dry it.

Perhaps, if the dye be rather weak, the yarn will require repeated dippings.

There are many methods, by which blue is obtained on cotton and linen; but the above, in general, is most approved.

The Second process to obtain blue on Linen and Cotton.

The dyer may take barrels, or vessels of a larger, or smaller size, in proportion to the goods, which he expects to colour. However, vats made for the purpose are preferable.

See that the casks are perfectly clean,

If the dye be set in a barrel cask, grind with a ball one pound and an half of good Indigo to a paste; while grinding, moisten it with some lime-water and a solution of Potash which we shall soon notice.

Dissolve three pounds of Potash, in an iron kettle with three quarts of water. Steep one pound and an half of quick lime in three or four quarts of hot water, and when it is well

settled, turn off the water into the Potash; then pour the Indigo into this compound of Potash and lime, after the same manner as is prescribed for the woollen blue vat. Let these boil together, moderately, till the Indigo rises to the top of the liquor which may be known, by rapping the bottom of the kettle with a small stick; if it sound hollow the dye is sufficiently united. Now slack as much more lime; add six or eight quarts of warm water and three pounds of Copperas. When the Copperas is well dissolved, turn it into the vat or cask, which is to be previously about half filled with warm water; then turn in the compound of Indigo &c. from the kettle. Stir the whole together; then with warm water fill the vat, within two inches of the top. After this, stir it with a stick, three or four times in a day till it is fit for use. Perhaps it will come to maturity in one day; however, this much depends on the warmth, or coolness of the weather.

The yarn in this vat, is to be worked after the same manner, as was prescribed in the

other dye. When in the dye, the yarn should appear of a dark green ; and when exposed to the air change to a blue.

These vats produce a large head, or blue froth which floats on the top of the liquor.

This dye cannot be replenished ; when the strength is exhausted, it must be thrown out. It would be convenient to have two vats. If one dye be weak, begin to colour in that, and finish in the other, which should be strong. By these accommodations, the dyer may colour when he pleases. This is an expeditious way, because the dye is directly brought to work ; and it produces good colours. But the first method is preferable ; because by timely replenishing it, you have a constant dye.

N. B. If this dye become faint, you must rake it, and let it settle, before you dip again ; for the sediments will injure the colour.

Third process to obtain blue, on Cotton and Linen, with Logwood.

Prepare the yarn with Roman vitriol. For

every pound of yarn ; put into a kettle of water two ounces of the vitriol ; let it dissolve ; then spread in the skeins of yarn ; let them boil, for two hours ; then take out and rinse. Make a liquor of Logwood. For every pound of yarn, employ four ounces of Logwood, well chipped and boiled in a kettle by itself ; then turn it into the kettle, where the yarn is to be coloured, after taking out all the chips. The yarn may boil in this liquor and be dipped half an hour. This process of dipping may be repeated, two, or threetimes, till the colour rises to your fancy. Then take up, rinse and scour it, in a weak suds, to prevent its being brittle.

The dye produces a bright blue ; but it soon languishes. It will answer if it be not exposed to the sun and air. Being a cheap colour, families may dye this blue, and for some uses it may be serviceable, to them.

N. B. For every pound of yarn, make two gallons of liquor.

C H A P. XXIX.

To dye thread purple, olive brown and black.

PURPLE; for one pound of thread, boil five ounces of Logwood, in an Iron vessel, for three, or four hours. After boiling, add two ounces of Alum to the liquor, after it is dissolved put in the thread; let simmer two or three hours; then take up and scour it in a weak suds.

Olive Brown; for one pound of thread; put into a kettle, with two gallons of water, half a pound of Fustick well chipped; boil it three or four hours; then put in half an ounce of Roman vitriol and one ounce of Copperas; let them dissolve; then introduce the thread; let it simmer, one hour; then take up. If it be not dark enough, add a little more Copperas to the dye and dip again.

After it is coloured and rinsed, boil the thread in water, with a handful of wheat bran to render it soft and pliable.

Black; for one pound of thread, put four quarts of yellow oak bark into two or three gallons of water. Boil it three, or four hours, then take out the bark, and add to the liquor three ounces of Copperas; after it is dissolved put in the thread; let it simmer two hours; then take up and rinse it; then dip in a liquor, made from half a pound of Logwood, till you obtain the black.

C H A P. XXX.

To dye thread, Red and Green.

RED; for one pound put four ounces of Alum to two gallons of water, with a handful of wheat bran; after the Alum is dissolved, lay in the thread, loosely, that the colour may take equally. Let the dye simmer over the fire, for eight or ten hours. Now take up the thread; gently press it with the hands, and hang it in the shade to dry. Make a new liquor; the same quanti-

ty of water, with one pound of the best Mad-
der. When the dye is scalding hot, put in
the thread, preserve the same degree of heat;
with a stick, frequently stir the thread, that
it may be equally coloured. Perhaps it will
take a day to obtain the colour; but the
time will be in proportion to the shade de-
sired.

P. S. You may put four ounces of Nut-
galls, well pulverised, to the Madder. Then
by dipping the thread in a yellow dye, either
before, or after it has received the Madder,
will give you the Orange; and by having
the dye strong, or weak, or by keeping the
thread in the dye, a longer or shorter time,
the dyer may obtain any shade he chooses.

When the thread is coloured, rinse it
thoroughly; then scald it in water with a
quart of wheat bran; rinse again, and dry
in the shade which is necessary for all colours
on thread.

Green.

First dye the thread blue; after it is rinsed,
Alum it, the same as for red; then dip in a

yellow dye. This may be of Fustick, Tere-
merech, or yellow oak bark; this colour
however is dull and heavy. The dyer may
govern the shades and make them dark, or
light as he chooses in these two dyes.

N. B The dyer will make it a standing
rule to have all his thread of flax, or cotton,
well cleansed, previous to dying. That
which is made of flax, should be boiled in a
white lye, made of ashes and water, boiled
together. Cotton must be cleansed, by a
strong soap suds. Without being well cleansed,
these threads will never receive any per-
manent colour.

C H A P. XXXI.

For dying Silk.

THE high price given for la-
bour, in this country, has, and perhaps will
for many years, prevent any extensive culti-
vation and manufactories of silk.

Europe and Asia, being full of people, who must be employed, on low wages, will, undoubtedly, manufacture the principle part of the silks, that may be used in this country, for ages to come.

Old goods, with a small quantity, in skeins of new silk, are the most we shall have to colour at present. Hence it will be needless long to detain you, on this branch of dying.

Only a few prescriptions, that may be useful, will be given.

Silk stuffs may be coloured in the woollen dyes; by giving them the ground-work, before the woollen cloth is put in, and by darkening them after the cloth is coloured.

Silk requires a stronger dye than wool. It is the better way to make a dye, by itself, for silk. It should be strained through a fine sieve; for chips, barks, &c. will be very injurious to the silk, especially to skeins, from which it is almost impossible to separate them.

Dyes made of impalpable powders need not to be strained; they will rinse off in the streams.

Black on Silk.

For one pound of silk, take four quarts of yellow oak bark; boil it well for three hours. There should be two gallons of liquor after the dye is strained; to this decoction, add two ounces of Nutgalls well pounded, and four of Copperas. Let them boil half an hour; then check, with a pint of cold water. Put in the silk, and keep the dye about one degree below boiling heat; stir the silk in the dye, for five, or six hours; that it may equally imbibe the colour; then take up, cool, rinse and dry it in the shade. The silk will then present you the colour of the dard olive. For the next process, make a decoction of a pound of good Logwood, and dip the silk until it receives the colour you desire. The shade the dyer may ascertain, by drying a corner, or a few threads, after the colour is received. Now rinse, wring but moderately, dry in the shade. Of whatever colour, silks must never be dried in the sun.

After all these, dip, once more, in a solution of loaf sugar, with two quarts of water,

brought halfway to boiling heat ; then dry, and the silk will present you a shining jet black, whose colour is durable.

Cinnamon.

For one pound of silk, boil half a pound of Camwood, that is ground, with two gallons of water, for fifteen minutes, in a brass, or pewter vessel, then dip, and carefully attend, that the silk may equally receive the colour. Continue till you obtain the colour desired. Cinnamon will answer for sewing scarlet cloth. After the Cinnamon is obtained, you may produce a number of shades, by adding Copperas, in small quantities and dipping a number of times.

Saxon blue.

For one pound of silk, to eight quarts of boiling water, add about half a table-spoonful of the compound oil and Indigo. Stir them well ; dip the silk and keep it moving for a few minutes ; take up, and if it be not sufficiently coloured ; add a little more of the

compound, and thus proceed till the colour rises to your design.

Green.

To two gallons of boiling water, add two ounces of pulverised Termerech, boil a few minutes, then add four ounces of Alum; after it is dissolved, add half a table-spoonful of the compound, oil and Indigo. Mix all well together; then dip for fifteen minutes; take up and cool, and so proceed till the colour is obtained. If it need more yellow add Termerech; if more blue encrease the proportion of the compound.

In all colours upon silk, for one pound of goods two gallons of liquor are required. But the quantity of dyestuff employed in colouring greens, will ever require the discretion of the dyer. By different proportions of the Termerech and compound, various shades may be obtained. But without Termerech, no good, nor handsome green can be obtained on silk.

Olive brown.

Boil Fustick, yellow oak, or walnut bark ; after the liquor has received the strength of the dyestuff, strain it. Bring it to boil ; then dip the silk from time to time, adding a little Roman vitriol and Copperas. For a light colour give short dips. A variety of shades may be obtained in this dye.

Light browns.

To eight quarts of water, put four ounces of Nutgalls well pulverised, boil fifteen minutes and add a piece of Alum, the size of a walnut, let it dissolve ; then dip the silk fifteen minutes ; take up and cool ; add a little Copperas, then dip as before ; thus proceed untill you obtain the colour desired.

Violet and Orange.

For one pound of silk, put four ounces of Alum to eight quarts of water. Let them almost boil ; then carefully dip for one hour. Take up and rinse it clean.

Make a new dye, with one pound of Brazil, or Redwood ; boil it half a day ; after it is well strained from the chips, there should be two gallons of liquor ; bring it almost to boil and dip the silk. That which you design to be light, dip but a short time ; that for a full colour, will require a longer time. Stir the silk briskly, while in the dye, that the colour may be equally received.

Now, for violets, make a new dye, with half a pound of Logwood. After it is well boiled, strained and cooled, dip the silk in the liquor. If you dip silk in a decoction of Logwood when it is hot, or even warm, you can never obtain a bright colour except blacks. In the last place, dip the silk, in a very weak solution of Pearlash ; this liquor should be hot, as it will brighten the colour. Rinse well and dry.

Orange ; after the silk has received the Redwood dye, make one, with two ounces of pulverised Termerech. Boil a few minutes, then dip the silk, longer or shorter, according to the shade, you wish to produce.

Many other methods are used to obtain these colours, but the above is sufficient to produce all the variety of shades that may be desired.

Yellow.

Though a number of different dyestuffs will produce it, we shall mention Termerech only. This, however, soon fades; but it gives a bright and beautiful colour, and, for many uses, answers a good purpose.

First give to the silk the Alum, as for violets; then dip in a liquor of Termerech. The quantity of dyestuff, will be in proportion to the shades required. The dyer, by adding and dipping, may obtain all the variety of tints that exist between the straw colour and the full yellow.

Navy blue.

First, dip an hour, one pound of silk, in a solution of four ounces of Copperas, to two gallons of water. While dipping have the liquor hot. Then rinse and dip in a decoction of Log wood untill the colour is obtained.

*To soften water that is hard, or impregnated
with Minerals.*

Enclose a pint of wheat bran, in a linen bag tyed closely, put it into ten or twelve gallons of water; let it boil, and take off the scum, as it rises. Any water that is clean, may by this method be made sufficiently soft for colouring, or to wash linen cloth.

The hard, or rough water, which some wells produce, may be rendered soft, by observing this prescription.

C H A P. XXXII.

Directions to preserve dyestuff from injury.

IF this be neglected, some kinds, will loose all their valuable qualities; others will receive so much filth and dirt, as to render them nearly useless.

Woods, of all kinds, in the stick, should be kept in a cellar, raised from the ground and so covered that the dirt, or dust may not

adhere. All that are ground, and put in casks, should be preserved from the air.

Indigo should be preserved in a celler, and secured from dirt. Cochineal, and all other drugs, for dying, should be confined from the air and from any kind of dirt or filth; more especially, when they are pulverised. It will be, both convenient and economical, for dyers, to have a number of boxes, or draws, in which they may preserve small quantities of dyestuffs and salts.

Copperas is volatile; of consequence, it should be kept close from the air.

CH A P. XXXIII.

Remarks on milling, or fulling cloths.

MILLING cloth is a branch of the clothiers business. Some instructions, on this branch, may be necessary; since, in this country, dying and dressing of cloths are performed by the same workman.

To full cloth, the mill must be so constructed, as to keep it in the action of turning. The mills first constructed in this country, were destitute of this necessary quality. The workman was obliged to stop them frequently, to shift, or turn his cloth.

Of the mills now employed, those with cranks are much preferable to any other. One third part of the water employed, in those which move with oval blocks, will give a sufficient action to the crank mill. However, either will answer the purpose, provided it will turn the cloth, which is absolutely necessary.

All cloths designed to be handsomely dressed, should have the nubs cut off before they enter the mill. Also the cloth before it is put in the mill, must be wet, with soap-suds, of sufficient strength, to raise, or start the grease directly. It should be so moist, that the workman, with his thumb and finger, can wring a corner of it so that the soap and grease will rise, appear thick and dirty, and feel slippery.

Put in a sufficient quantity of cloth, to have it turn well in the mill. Be careful to shift the cloth, that is, take it out before it adheres, or grows together. Stretch it over a pin made for that use. As you fold the cloth over the pin, keep the edges and other parts of the cloth from doubling; lest they should become connected by fulling. Then put it again, in the mill, and thus proceed, until the cloth is half milled; then scour it, that the threads may close in the second milling, to render the cloth firm.

A weak suds will answer for the second milling. The cloth will not be so apt to adhere, when so near its thickness. It may now run in the mill much longer. However, the workman must attend, lest it become thicker than he chooses.

After the cloth is properly fullied, scour it clean, in order for dying and dressing.

Some nap before dying, which is a good method for some colours; but not for light ones; these may be accidentally spotted and if this be the case, the clothier may take which side he chooses for the face.

Some clothiers full their cloths, in lies, because this method is cheaper than soap.

This is a pernicious way of doing business; the cloth will be rough, brittle and will not perform half the service, as if full'd in soap. Though lie will start the grease, yet every workman ought to be prosecuted for fraud, who fulls his cloth in lies. He on'y saves to himself a few cents, while he robs his customers of many dollars.

Some leave grease in cloths, after they are milled; this is a piece of insufferable deceit and slovenness. When in the cold air, such cloths will appear to be thick and firm, when warm, they will be slimy and emit a fetid nasty smell. To press cloth, from which the grease is not thoroughly cleansed, will injure the papers, which will tarnish the colour of other cloths.

After the cloth is milled and dyed for dressing, it should be well napped, with jacks. Cloths designed for handsome dressing, should be plyed with jacks until a fine thick nap rises. Those for common use, will not require so much labour.

Lambskins must be napped on both sides, and not milled so thick as for shearing. In like manner baizes, as they are designed to be both light and warm, should have but a light milling and napped on both sides. Bearskins should be napped on both sides and fulled thicker than common cloths, as they are designed for winter garments.

Beaver coating, should be fulled closely, napped and shorn once even; then it should be teased, and left with a short, fine nap. This is to be dressed, only on one side.

The reason why Lambskins, Bearskins and Baize should be napped on both sides, is because they will be much warmer; beside, much, by this method may be saved, in cutting garments, for which they are designed.

N. B. Workmen should be very careful of cloths, while in the grease and soap. In these cloths, packed and laid aside, too long, will become so warm as to ruin them. Cloth thus packed, even in co'd weather, will sometimes become hot in six or eight hours.

Look to it frequently; for sometimes it is necessary to have it in a pack, or heap, in

cold weather, and covered with dry cloths to preserve it from freezing.

After it is scoured clean, from the soap and grease, the frost will not injure it. However, it is the better way to dry it so soon as may be convenient ; fold up and lay it by till needed.

After cloth is well milled, dyed and napped, you must tenter, or strain it on the rack, which is made for the use, called tenter bars. The hooks in these bars should be set by a line, at two inches distance from each other ; so that the edges of the cloth may be straight, when dried, and it also will dress and appear much better.

Cloth should be strained on the rack, to take out all wrinkles and give an even width, when dried.

When the cloth is properly tented, being wet, the nap should be laid with a jack, or brush. Jacks will answer some colours ; in others a clean brush is preferable. Jacks should be preserved from rust ; a dirty, or rusty jack will injure any colour ; those that are light it will entirely ruin.

C H A P. XXXIV.

Of shearing Cloths.

WHEN the cloth is drawn over the shear-board, begin at that end towards which the nap is inclined. The shears ought to move lightly and freely, to cut clean.

There should be no ridges left on the cloth after shearing. Some cloths will require more shearing than others, to make them appear handsome. After cloths have been shorne once, those designed to be nearly dressed, should be well napped with Teasels. Some workmen nap when the cloth is dry; others when it is wet. Either way will answer. However to nap with Teasels, when the cloth is dry is attended with less trouble. If it be well plained after shearing, it will leave a stiff nap; that is, it will be sof. to the hand, when it is drawed with the nap, and will feel rough when drawn in opposition to it. When cloth is thus dressed, it will appear,

and wear handsome. If cloth be well napped, it will generally need to be sheared five or six times ; perhaps more. However, experience is the best instructor on this point.

When cloth is well dressed, the thread will not be discovered on the face, though it be shorne a number of times.

Those cloths that are not napped with Teaseis, it will be suitable after each time of shearing, except the last, to lay the nap well, with a jack. Cloths in this manner, may be dressed so as to appear decently. After shearing, plain well ; this will leave the cloth sleek and smooth.

For nice cloths, it may be well to shear the back once, without napping.

N. B. Large nubs should never be drawn out with Tweazers, but cut off with small shears.

C H A P. XXXV.

Observations on pressing cloths.

THE plate of the press should be two inches and an half thick. The upper side smooth. When ready for use, spread on it a little fine sand; then draw over it the straight edge of a board, to render it level. Next, lay on about twenty press-papers, as a fence to preserve the cloth from the plate, while pressing.

The plate should be equally brought to such a heat as may gently repel water, when it is thrown upon it.

The cloth being papered for pressing, is to be put upon the plate, and for the first pressing screwed moderately; so that the last pressing may take out the scuttles, or seams caused on the edge of the papers, by the folds. Thick cloths should not be kept too hot in the press, lest they be stiff and hard,

like buckram; they should come from the press soft and pliable.

Cloths are sometimes so stiffened by the heat of the press, as to essentially injure them. By such a dry heat, to render cloth obstinate like parchment, all must allow, will injure it.

Thin cloths require more heat and a closer press. Some stiffen with gums, before pressing; others employ water, while papering for pressing. It is the best way to take up two of the fence papers, and sprinkle the plate with water; then lay them back; introduce the cloth and give it a close pressing. The water will find a course through the cloth.

Thin cloth should not be turned in the press. However, long pieces may require it. The plate should not be sprinkled, when the cloth is turned; for that would take out the pressing, which the cloth has received.

Let thin cloth lye on the plate over night, or till the press is cool.

A cold press is very convenient; after the cloth has lain over night in the other, it may

be shifted to this in the morning; hence the workman may press every day, if he choose. When there is but one press he cannot finish a pack of cloth, in less than two days.

After all, experience is necessary and no person can dress cloths well, until he has served a regular apprenticeship.

C H A P. XXXVI.

Of sorting wool, for cloth.

IN this country, women sort the wool. A suitable attention to the business has been too generally neglected. In the European factories of woollen, the workmen divide the fleece into six or seven sorts or parcels, from the fine, down to the coarse.

The best wool grows from the kidneys, over the shoulders, to the neck of the sheep. This should be employed for the finest cloth. The remainder should be divided for the use to which the sorter designs it.

Coarse wool should be wrought into blankets. By thus assorting wool there will be no waste; but by mixing fine and coarse wool, in the same piece, the cloth will never appear well after dressing, nor do the service it would have performed, had the wool been well sorted.

All the coarse ends should be cut off and cast away. If they be spun and woven into cloth, the colour you impress upon it will be neither clear nor even; for coarse and fine wool, will not equally receive any colour.

After wool is sorted, it should be carefully pulled apart and have all the nubs and motes taken out. Then put it into a basket, or some clean place, where no dirt or lint can reach it; for these are very injurious to wool.

After the wool is well picked, grease it with hogs-lard, or soft fat. Put one pound of grease to seven of wool; mix them well until the wool is soft and pliable. After it has received the grease, it should be broken with good cards and laid in bats, until all the wool is broken, which is designed for

one piece of cloth. Then lay the bats in a pile; put a board on them, and pressing on the board, with the hand, or knee, gradually draw out the bats with the hand, until they are all drawn from under the board. Being thus separated, by a second picking, the bats will be well mixed. Now divide the wool into two equal parcels, one for the chain, or warp, the other for the woaf, or filling.

Now let one person spin the wool, that the yarn may be equally wrought. The filling should be spun with the wheel cross banded. Give the warp no more twist, than will weave without fretting. The woaf should be twisted nearly as hard as the warp.

After the yarn is well cleansed, prepare it for the loom. The weaver should fley the piece as high, as it will bear to spring freely in the loom. Employ as much filling, as can be conveniently introduced. Beat closely as you weave. Avoid old harness; because it greatly injures the cloth. Leave a good selvage and trim carefully as you weave.

When cloth is made in conformity to these directions, there is no danger of its working.

badly in the mill; it will not cockle; but drefs neatly.

If a number of hands be employed in spinning a piece, you may generally expect that the cloth will cockle in the mill; and such cloth can never be dressed, to appear, decently.

Some people proceeding in this manner with their wool, complain of the clothier because their cloth does not answer their expectation; and after sufficient reasons have been given for the failure, as have just been mentioned, they still determine to be ignorant, "in spite of experience." The truth lies here; if wool be not properly sorted, and suitably manufactured by the cards, wheel, and loom; it is impossible for the clothier to dress it even decently.

All cloths, that are not to be milled, should be well mixed in the wool, before spinning; for wool, in consequence of the reasons before suggested, will not equally receive the colour; the cloth will be striped, if not well mixed in the wool.

Families may manufacture their own Kerseymires neatly, by making a good choice of their wool. The finest is necessary for those cloths. The yarn should be spun about eighty knots to the pound. This, and all other yarn should be even. If it be unequal, some places being large and others small, no cloth made of such yarn will appear, even decently.

Kerseymire should be sleyed with three threads in a reed, and sprung with four treadels, one half at a spring. It must be equally waled on both sides.

Next, it must be fulled lightly, and well dressed. The finer the yarn, the neater the cloth. I have dressed cloth, the yarn of which was spun one hundred and ten knots from the pound; however, we seldom have wool that will admit of running so small.

It is the better way, never to draw a thread from wool, smaller than it will have strength to support when under the action of the loam. Wool would run finer and smoother, if our farmers would be more attentive to their sheep. They should never be yarded

with cattle ; they should be fed in a rack, so constructed, that the seed and chaff from the hay may not fall into the wool. These essentially injure it.

Sheep should be kept in good flesh, that the wool may be lively. After the sheep are washed they should not be shorn, in less than six or seven days. The reason, why you should wait so long after washing, is that the animal oil may penetrate the pores of the wool. This oil preserves the wool alive and keeps it soft and pliable.

After the wool is taken off, it should be laid in some dry, clean place. When it is dry, store and preserve it from all dust and filth.

If Farmers would observe these directions, they would soon find their account for their extra trouble.

Never dispose of your best lambs ; but preserve them for their good wool.

CH A P. XXXVII.

To know when the cloth is well dressed.

WHEN cloth has received a good dressing, and is finished in a suitable manner, it will be soft and firm. Being shorn even, it will present you a short, thick nap, which lies smooth, in one regular direction. By drawing your hand, with the inclinations of the nap, it will feel sleek and smooth; to move it in opposition, the nap will feel rough and prickley.

If the cloth will bear this inspection, you may conclude that the workman has done his duty. The workmanship on cloth, that is designed for handsome dressing, may be discovered by the eye. If it be pressed stiff, like buckram; if the nap be irregular, and the face of the cloth be rough, the workman has not performed his duty, but he has endeavored to hide his failure, by the press. The press, on thick cloth, is of no importance. Cloth should be so dressed as

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to wear, as neatly without, as with pressing. The only reason, why thick cloths are put in the press is to give a light gloss and to make them appear a little more compact and finished.

However, if the cloth have not been regularly manufactured, before it is presented to the clothier, it will lay beyond his power to dress it neatly. Whoever will inspect his cloth, in conformity, to the foregoing directions, may easily know, whether the clothier have performed, or neglected his duty.

Did the people of this country, thus inspect their cloth; unfaithful, and ignorant clothiers would not be employed; while the well informed and faithful workman would be enabled to do business upon a more extensive scale than any have yet attempted in America.

If cloths were manufactured and dressed so well, as our wool will admit, gentlemen, in general, would prefer the productions of their own country, to those of Europe.

L

- But, greatly to our injury, cloths of this country too generally, have not been properly treated in dying and dressing. One reason is because many who pretend to be workmen are intirely ignorant of colours, their combinations and the physical qualities of dyestuffs. Another reason, that may be rendered for this imposition, is, because many attempt to dress cloth before they are acquainted with the business and of consequence never acquire a suitable knowledge of it. It would greatly promote the interest of the nation, as well as that of individuals, were no person to attempt the dying and dressing of cloths, until he had obtained suitable information, by instruction and experience. Gentlemen, of literary acquirements, who have turned their attention to chymical analysis, acknowledge that the art of dying is as difficult as it is useful.

A great proportion of the people, being ignorant of the clothiers and dyers art, have been satisfied with the workmen, they employ though their goods have suffered

through the ignorance, or fraud of the dyer and clothier.

If the goods present a flash and finical colour and come stiff, from the press; many people suppose that they are well dressed. But the stiffness, which the cloth has acquired from a warm and close press, is designed, merely, to conceal the faults of the clothier.

If people will only observe, they will find, on wearing such goods, that the colour will soon fade; the cloth will become rough and coarse; whereas if the cloth had been well coloured and dressed, it would have worn smooth, so long as the garment would remain whole and decent. For general information it may be necessary to point out some further directions, which any person, on viewing a piece of cloth, may determine, whether it be well coloured or not.

Of colours; some reflect a beautiful lustre from the extremities of the nap, that is raised on cloths. Others present a beautiful body from the grain of the cloth; but afford no lustre.

Those which afford a lustre, or reflect the rays of light that incidentally fall upon them, are Deep blue, Black, Navy blue, Cinna-mons, London browns, Clarets, Snuff browns, Saxon green, Bottle green, Olive green and Purple.

These are full colours, and if well dyed, by casting the eye towards the light, level with the cloth, the hairs, or wool that rise upon it; will appear bright and lively; as if the rays of light shone through them. Those colours which, by this experiment, appear faint and languid, you may determine have not received their complement of dyestuff and are not well coloured.

Scarlet affords no lustre; but if well dyed, the body of the cloth will look glaring, bearing slightly on the Orange.

Crimson presents no lustre; but, if well done, it gives a beautiful body.

Berry Red produces a lustre and glares, full of the *Blazon*.

There are many shades of different colours, which give no lustre, yet they should appear clear and bright. It is necessary that the

dye should equally penetrate the pores of the wool ; then the cloth, with few exceptions as to colour, if well dressed, will appear handsome. But if the cloth have not well received the colour ; if it appear daubed, it will discover the fraud, or ignorance of the dyer. If it be poorly dressed, however good the colour, the cloth will never afford, even a decent appearance.

General observations.

You will observe the common directions, in this work, are given for colouring a certain number of yards. The design is to accommodate the dyer, who frequently wishes to take cloth, directly from the mill, before it is dry.

To take our cloth, on a medium, when fulled, twenty yards will weigh about fourteen, or fifteen pounds. Thus the dyer may proceed, by weight, or measure, in all those dyes where the prescription is for twenty yards ; but where a particular weight, of goods, is mentioned in the prescription, for some colours, it must be strictly observed.

Wool in the fleece, or before it is spun, and yarn that is to be coloured, must be weighed, in order to proportion the dyestuff.

Before we proceed to reduce dyes to small quantities; observe that no iron vessel may be employed, excepting for the black dye.

Small dyes require a larger proportion of dyestuff. They may, however, be reduced to one quart and will produce as good colours as those which contain sixty gallons.

Be careful never to crowd them with goods so much, but that they may freely swim in the liquor.

Thirty six yards of full cloth, or twenty five pounds of goods is sufficient for seventy gallons of dye. The same proportions should be observed in smaller quantities.

Wool in the fleece must be well cleansed, before it is coloured. The dye must be well strained from wood, bark and sediment, before the wool is entered; if this be neglected, the wool will be tangled which will greatly injure it.

For the same reasons yarn in the skein should never be dipped until the dye is thus.

cleansed. Yarn for dying should be put on small bows made for that purpose. Three or four run, may be placed on a bow or according to the bulk of the yarn. Bows are convenient, both to plunge the yarn and to keep it moving, while in the dye, which is necessary to its equally receiving the colour.

To colour wool it will be convenient to enclose it, loosely, in a net bag. Then you may easily take it up from the dye, to cool, to pick open for dipping again. And this is necessary that the colour may be even. Wool will receive all colours that may be impressed on cloths. The dying of wool is convenient for mixing colours.

Prescriptions for reducing the following dyes, to a quantity, which may be required, to colour a pound of woollen stuff.

Navy blue.

One pound of goods requires two ounces of Copperas, six ounces of Logwood, and three gallons of water.

Black.

Three ounces of Copperas, one quart of yellow oak bark, one quart of Alder bark and half a pound of Logwood with three gallons of water.

Cinnamon and London browns.

One half pound of Camwood one tea-spoonful of oil vitriol and two of Roman vitriol, with Copperas sufficient to darken to the shade required, with three gallons of water.

Saxon green.

Twelve ounces of Fustick, three of Alum, and three gallons of water; then add, in very small quantities, of the compound oil and Indigo, till the colour rises to your wish.

Scarlet.

Two ounces and one quarter of an ounce Aquafortis, one ounce of Cochineal, half an ounce of granulated tin, two drachms Salamoniac, one drachm Saltpetre, a tea-spoonful

of Termerech and half a pound of wheat bran with three gallons of water and six drachms Cream-tartar.

Crimson.

Three ounce of Alum, one ounce and one drachm of Cochineal, half a pound of wheat bran and three gallons of water with six drachms Cream-tartar,

Purple.

First make it a crimson then dip in a good urine vat.

Yellow.

Three ounces of Alum, three gallons of water ; then dip in Termerech liquor till the shade you design is obtained.

These are the principle dyes, which people in common will, at present, wish to reduce to so small a quantity. You must proceed with them according to the directions given on the large scale. From the foregoing *Recipes* you find that a small quantity of dye, requires a larger proportion of dyestuff.

Of those colours, which will endure milling.

These are as follows, Deep blue with all its shades, Navy blue, black, Cinnamon, London brown, Snuff brown, Crimson, Madder red, Pink, Purple, Claret with Redwood, drabs and ash. These observations are inserted, in order to accommodate people, who would wish to mix any of these colours, in the wool, for cloth that may pass through the mill.

The method for preparing felts for trial.

“ This little manoeuvre is evry simple,
“ but very useful, as by it you will be enabled to judge, in a quarter of an hour, what
“ the stuff will be after it is manufactured,
“ and even entirely dressed. For this purpose you take wool of different colours,
“ and having accurately weighed each, the
“ mixture is made with the fingers in what
“ proportions you think proper; but the
“ whole in such a small quantity, that the
“ mixture when finished, is no bigger than the
“ size of your hand. It is then moistened with

“ a little oil, and carded with small cards till
“ the colours are blended together and per-
“ fectly well mixed; you then take this
“ wool, which is exceedingly loose, and in
“ the square shape of the cards; you fold
“ this in four, and press it lightly between
“ the hands. It is then dipped in a strong
“ solution of soap in cold water; it is again
“ taken out and squeezed hard between the
“ hands at several times, sometimes clapping
“ it from one hand to the other. It is after-
“ wards rubbed lightly between the hands,
“ by which means it is in some degree felted.
“ It is again soaked in soap and water, again
“ fullled, till it has acquired a proper consist-
“ ence resembling that of cloth. This Felt
“ is then a perfect pattern of what the cloth
“ will be when manufactured: For if the
“ wool has been properly spread in the hands
“ after carding, and carefully managed, it
“ will be as even as cloth. To complete the
“ resemblance after it has been washed, in
“ order to cleanse it from the soap, it should
“ be dried, and having put it between two
“ papers, pressed with a hot iron.

The previous suggestions are offered, that workmen may suit themselves in mixing colours. Europeans, apprised of our encreasing manufactories, attempt to baffle our attempts, by imposing on us mixed cloths, as fashionable. They are sensible that the younger look, to the older nations, for the pattern of their garments and for the fashionable colours of their cloths. For this reason, Europeans, frequently change or mix their colours to retain our adherence to their markets.

C H A P. XXXVIII.

The cultivation of Teasels.

T EASELS are necessary to dress cloth neatly; without them, a good nap on fine cloth, cannot be handsomely raised. This plant is easily cultivated. Its seeds resemble those of the Burdock. They should be sown early in the spring, in moist,

rich ground. They should be placed in rows, about eight inches apart. Cultivate, and thin them, when the stock has acquired six or seven leaves. Before winter, cover them with brush for their preservation. The next spring take up and then set them three feet apart; keep down weeds, and hoe them as other garden plants. In the course of the second season, some of them will arrive to maturity; the remainder should stand for another season; then they will come to their perfection.

Teasels rise about three feet, from the earth and branch out in various directions. Each branch contain a bur about the size of a hen's egg. This bur is full of little thorns, which turn down toward the stock, like card teeth.

After the blofom is fallen they should be gathered for use, with about eight inches of the stem. When the Teasels are dried, secure them from rats; as they would soon destroy them. They produce largely. I have taken eighty heads, or burs from one stalk. To prepare them to nap cloth, con-

fine a number of them in a hand, made for that purpose. This is a stick containing two small mortices aside each other. In these, flats are incerted; between which the stem of the Teasels are placed. A string is then to be drawn from each end of the flats, through a gain cut in the end of the shaft, or handle, to confine the Teasels. A hand thus made will present you the form of a semicircle.

Every clothier should also be furnished with a plane, to clear the cloth of dust and hairs after it is shorne; and to lay the nap for pressing.

It is made from a board, or thin plank, of hard wood. It should be eighteen inches long and six in breadth, a little crowning, on the face, with a handle, at each end, made fast to the plain. The face should be hacked, to retain the cement, which is glue laid on, one eighth of an inch thick. Fill this glue with transparent glass, grosely pounded. Sift out that which is powdered and take off all large pieces; that to be employed, though of various forms, should be

as large as small shot. Lay these on the glue, which is spread, on the face of the plane. The glafs should be equally distributed, when the glue is warm; then press the glafs down to the surface of the glue, being spread, so as nearly, to cover it. When the glue becomes cold, the glafs will be so fixed as to make an impressiion upon iron, and if the plane be well made it will last many years, without renewing.

C H A P. XXXIX.

Of the Shear-Board.

THERE are various ways, by which it is constructed. Some prefer a loft, others a hard cushion. A medium is the best. The most convenient and durable Shear-Board is constructed in the following simple manner. First take a pattern from the leger, or under blade of the shears, by placing a thin board parallel with it, and

then marking the bend of the leger on the board; after this cut out the board, exactly, to the line. By this pattern fix four or five pieces of slitwork so long as you design, for the width of your board. Then take clear white pine boards; after joining them plane one side and wet it with water; then lay the rough side to the fire, which will warp it. When the board is sufficiently sprung, nail it to the pieces of slitwork; a piece should be placed to each end, and the others at equal distances between them. After the boards are thus nailed, joint them, exactly, to the pattern. This being done, cover the Shear-Board, with a bat, or cushion made of wool. Take the length and width of the surface, on which, you intend the shears to move. Employ a batter to bow the wool for the cushion, that it may be even. If it be three fourths of an inch thick, it will answer. It should be dry when matted together; after this put it on the board and draw your covering closely over it. Leather is the best covering; it will last must longer.

than cloth and preserve your goods, from lint, while shearing.

A Shear-Board made according to these directions will admit the leger of the shears equally to the cloth; and they will cut from heel to point without any trouble; while other boards are frequently out of order and cause the cloth to be sheared unequally.

For this improvement of the Shear-Board, I am indebted to the ingenuity of Mr. NATHAN SMITH, a gentleman, who is distinguished by his improvements of mechanic arts.

C H A P. XL.

Further remarks on dyestuff.

FOR a great proportion of the ingredients employed in dyes, we depend on Europe to furnish. With Europeans, it is an important object, to bring us their factories, for all the cloathing we need. As we at-

tempt an independence of their markets, they increase their duties on dyestuffs which we import. Not one cask, of Cochineal, can we obtain from our sister continent, South-America; from thence it must pass through the hands of Spain and England. From England we receive it, at an extravagant price. The dye woods, which abound in their Islands we cannot obtain without paying heavy duties. Foreign nations receive a large revenue from this country, for the dyestuffs we import. Does it become an independent nation, to be thus dependent on others, for articles, which, perhaps, may abound in our own country? Or shall we, without enquiry, conclude that nature has denied us these articles; being partial in the distribution of her favours? The Indigo weed is a native of this country; and for many years has been the only article for dyes that has been exported, towards ballancing the imports of other dyestuff. Of late, the shrub Sumach employed, to lay the ground, in paper-staining, has been ground in mills, constructed for that purpose, put in casks and sent to Europe. This affords a handsome profit.

We have various plants, weeds and roots, which produce a yellow. Among these are the root of the upland Dock the herb Peterswort; but in a particular manner the Ass-nart gives a yellow that is beautiful. If fermented, before it is employed in dying, it will impress a permanent colour. The Wood of Europe used in dyes is prepared by a chemical process, and produces a large revenue; undoubtedly the Ass-nart which, in the northern states is troublesome to farmers, might become profitable to them and our country were it suitably prepared for a dyestuff. Its extract is highly charged with acids and vegetable salts.

If our government should consider it worthy their attention, to encourage some able chemist to explore the qualities of our fossils, woods, barks, shrubs, plants, roots, weeds and minerals, perhaps, the advantages, our rising nation might derive, would soon indemnify us for the extra expense.

THE END.

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